PAPER TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 115, No. 24 Thursday, December 10, 1942 Price Ten Cents

Mills Support Manpower Conservation Plan

Manufacturers in Neenah and Menasha Join to Build Enthusiasm For Manpower Program and Reduce Accidents—Commission to Add More Inspectors—Plan to Reduce Forest Fires—Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., December 7, 1942—With conservation of manpower in the forefront through the elimination of accidents on or off the job, paper mills and allied plants and other industries of Neenah and Menasha, Wis., are joining this winter in building enthusiasm for the program.

A series of winter meetings is being arranged in cooperation with the vocational schools and the Wisconsin Industrial Commission. Prominent speakers in the safety world will be engaged, accompanied by entertainment and demonstrations for the benefit of all workers and their families. The dates and other plans will be perfected at a meeting December 15.

Representatives of the paper industry on the committee are: Howard Aderhold, Menasha Products division of Marathon Paper Mills Company; Clarence Elmgren, Gilbert Paper Company; Herman Goffin, Bergstrom Paper Company; Edward Page, Kimberly-Clark Corporation, and Donald Severson, Neenah Paper Company. Francis Rooney of the George Banta Publishing Company, is general chairman, and S. E. Crockett, director of the Menasha Vocational School, is the secretary. H. A. Klemm of the state industrial commission, will assist in the arrangements.

Commission to Have More Inspectors

With the same thought in mind, the Wisconsin Industrial Commission is planning to increase its staff of factory inspectors during the coming year. They will assist industries in providing added safeguards for the benefit of the inexperienced workers prevalent in so many establishments, persons unseasoned in the safety ambitions built up among older hands. Orland S. Loomis, governor-elect of Wisconsin, who takes over his duties January 1, is backing an increased state appropriation to accomplish this service in the interests of the war effort. During budget hearings, Voyta Wrabetz, chairman of the commission, revealed that the industrial accident and health toll in the state is more than 600,000 man-days per year. Everything possible will be done to reduce this annual loss.

While net profits of mills are being thinned by heavy federal taxes, there may be some relief in sight on state taxes. Mr. Loomis is intent upon reducing state expenditures at least $7,000,000 per annum for the ensuing year, and has ordered all budgets to be pared with the single exception of the industrial commission. With the diminution of labor disputes, he is advocating the closing of the state labor relations office in Milwaukee at a saving of $40,000 per year.

Plan to Reduce Forest Fires

Upper Michigan, important source of pulpwood, is formulating plans now for the reduction of forest fires next summer by utilizing the manpower of the civilian defense corps. A meeting was scheduled Monday, December 7, at Lansing by Duward Robson, chief of the state conservation department's fire-fighting forces, to be attended by supervisors of national forests in Michigan and key men in his own organization. With the Civilian Conservation Corps no longer available, the plan is to recruit between 7,000 and 8,000 volunteers from state and local defense councils, probably beginning this winter. They will be subject to call for forest fire service, and will be paid the usual 30 cents per hour for impressed labor allowed by the state. They will also be allowed supplemental gasoline ration books so as to attend instructional classes and be equipped to respond to fire calls.

Dr. Lowry Addresses Chemists

Dr. Charles D. Lowry, Jr., of the Universal Oil Products Company, Chicago, was the speaker at a meeting of the Northeast Wisconsin section of the American Chemical Society at Lawrence College, Appleton, Wis., Saturday evening, December 5. His subject was "Recent Developments in the Technology of Petroleum Refining." Dr. Lowry was guest at a dinner preceding the meeting at the Candle Glow tearoom.

Quarter Century Club Holds Dinner

Thilmany Pulp and Paper Company's "Quarter Century" club held a dinner November 30 at Hotel Kaukauna, Kaukauna, Wis., to admit six new members. The organization is made up of employees who

(Continued on page 24)

Canadian Newsprint Industry Is Unsettled

Indications of Impending Sharp Reductions in Production of Newsprint and Publishing Viewed With Concern — Wartime Board Sends Questionnaire to Publishers — Other Mill News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., December 7, 1942—The newsprint industry and the publishing business here are both in a very unsettled condition today, for there are many indications that sharp reductions in their activities are imminent. They are, apparently, to be hit in two directions. In the first place, reductions which are described as nothing less than drastic are proposed in the production and use of newsprint—some put the proposed cut as high as 60% eventually, with a 30 percent cut in the near future—and in the second place, employees both of pulp and paper companies and of newspapers have been rated exceedingly low in the job priorities drafted by the Selective Service.

During the past week publishers of all newspapers and magazines in this country have received a questionnaire from the Wartime Prices and Trade Board asking for information on their use of paper preparatory to control of consumption through establishment of quotas for each publication. This has a significance for the United States also, in view of the fact that wartime control of the paper industry has been undertaken jointly by Washington and Ottawa.

Wartime Board Issues Questionnaire

A statement accompanying the questionnaire sent to publishers in Canada, with instructions to reply in five days, said "until an order is issued providing for the distribution of paper supply on the basis of consumers' use," previous orders restricting delivery to those not having more than 90 days supply would continue to apply. It said further:—

"The allocation of paper supply through the establishment of a quota for each publication, will be based upon the use of paper by each publication, during a period to be determined, prior to Nov. 1, 1942. Economies currently affected by a publication, within the limits of any prescribed inventory, may be made without prejudice to the publication's future paper supply quota.

"There is a direct war need for every economy publishers can effect in the reduction of their use of paper materials, labor, transportation and power. Knowledge of this fact will be a sufficient incentive to publishers to make every possible economy through the reduction of the size of their publications, by diminishing or eliminating return and free copies, by cutting advertising checking copies to two or three, and by making a searching survey of every operation in which waste may be avoided."

The questionnaire for newsprint users asks the amount used in the 12 months ended September 30, and from whom bought. If more than five tons were used in the 12 months, the publication is asked the amount used in the six months ended March 31 and September 30, frequency of issue, and average press run per issue, in each six months period; also, the average press run per issue for the month of October, the over-all single page size, and inventory on hand March 31, September 30, and October 31.

Low Priority Rating for Employees

A revised list of manpower priorities, regarded as secret and confidential, has got into the hands of a newspaper reporter, and has been published in the *Ottawa-Journal*, which said it was the first newspaper to gain access to the official list of job priorities. According to the Journal, the grading of jobs is a basic guide for labor transfers, and is subject to frequent revisions as the need arises. The gradings are: "A"—top priority; "B"—high priority; "C"—low priority; "D"—no priority. Among those classed as "C," or low priority, are newspaper employees and employees of pulp and paper manufacturing concerns. The Journal gives the classifications for employees in many other businesses, and says:

"The priority yard-stick so far has been used only in the voluntary transfer of labor from dispensable civilian jobs, to essential occupations . . .

"Should the government decide that compulsion was necessary in the transfer of labor, the priority listing would be followed.

"This grading of essential jobs likely will be used to a greater degree in operation of the compulsory military draft."

"The preceding schedules—which have been only partially reproduced here—did not cover in detail all the industries, selective service staffs have been instructed. Therefore, 'good individual judgment in the use of the classifications in dealing with requests for labor' would be required.

"Selective service staffs further have been advised that:

" 'Equally good judgment will be necessary in the use of the schedule in determining where labor shall be supplied where there are concurrent requirements by employers in the same priority class. Difficult cases will also arise where the industry is engaged partly on war work and partly on non-essential work.

" 'Many factors must be considered in such cases, and specific rules of interpretation would not cover all such cases. Good common sense applied to the particular circumstances existing in each case will be the best guide'."

Paper Production Index

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 2, 1942—Industrial production indexes for paper and products, using 1935-1939 average at 100, with adjustment for seasonal variation was 130 in September, according to a report by the Board of Governors of the Federal Reserve System. Paperboard was reported at 123, and newsprint production at 106.

Without seasonal adjustment the indexes were: for paper and products, 134; for paperboard, 131; and for newsprint production, 106.

Heavy Paper Demand Reported in Midwest

All Major Grades in Wide Current Sales With Holiday Items Active — Salesmen Discuss Business Conditions — Conservation Department Studies Resources of Forest — Other Market News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., December 7, 1942—The Chicago paper market again gave a good account of itself during the past week. An increasing elasticity in government attitude on paper production helped to better the morale of the area but there was also a continuation of heavy demand which extended into all grades of paper. Virtually all local sales offices reported that their mills had backlogs of orders showing the desire of a busy war world to get "in to the market" before rigid clamping down in production plus man power and other problems combined to close the door. Krafts were reported to be in exceptionally good demand as jobbers and their trade decided to give holiday goods the usual protective treatment. Specialties likewise found a more ready Christmas market as the trade got "more of the Christmas-as-usual" spirit at the last moment. Fairly extensive plans for 1943 business, in recognition of tremendous purchasing power and perhaps a bit less shortages than were expected in civilian goods, extended into the sulphite market and in to the book and cover market in general. Groundwood and newsprint markets were also very firm. Waste papers, despite bad weather, were quoted as in abundance and local scrap drives continues to feature paper as a "war essential."

Study Plan to Produce Timber

Growth of timber on one-sixth of Illinois' total area would give this State a wood crop that would ultimately return $30,000,000 annually and provide employment for 150,000 men, according to the Illinois Department of Conservation in a survey requested by the Illinois Manufacturers Association. The calculations given above included only the value of the timber growth and did not include the value of the timber area as a source of employment for labor. "Recent studies," said the State department, "indicate that each 125 acres would require one man year of labor in maintaining and harvesting the annual crop. This is equivalent to continuous employment for nearly 50,000 men on an area of 6 million acres. The use of this wood by Illinois industries which now must obtain their supplies from distant states would furnish employment for more than 100,000 additional men. Manufacturing industries in Illinois used more than 580 million board feet of lumber in 1940 and at least a third of the total was shipped in from other states. Under proper management, the potential forest area could produce twice as much wood as it used in the manufacturing industries. Half of the 6 million acres suggested for forestation is woodland that never has been cleared and half is open land unsuited for farming or subject to erosion that cannot be controlled except by timber cover. The resultant increase in the over-all timber supply was expected to have an appreciable and salutory effect on industries using pulp from lumber as their major source of supply."

Industry Lags in Fund Drive

While the Community Fund of Chicago has reached its goal of $3,750,000 in its annual campaign to raise funds for Chicago charities, the paper division has as yet only gotten 77% of its required amount. According to word from the Fund headquarters, the paper industry here has contributed $28,551 of a quota of $37,000. The campaign is "officially" over but it is expected that the division will continue until its actual goal has been reached. Asked why the paper division had fallen somewhat behind the general record, the Fund headquarters reported that the division had "gotten a late start, that the chairman had not been named in time to get into early production" but that "Sterling Bown and his various committees were bringing in more funds every day." Mr. Brown, sales executive of the Champion Fibre Paper Company and chairman of the industry division, has about thirty very well known paper leaders as chairmen of the various divisions within the industry itself and including fine papers, coarse papers, paper boxes, folding boxes, paper bags, set-up boxes, waste papers, tag and sales book makers, envelope and tablet producers and jobbers, sales representatives and jobber concerns. Last year the paper industry division had a quota of $33,000 and raised $37,285. It confidently expects to surpass the $37,000 quota set for this year after it overcomes the handicap of a late start.

Salesmen Ponder Party Postponement

The western division of the Salesmen's Association of the Paper Industry spent its weekly meeting in an over all discussion of business conditions. Reports indicated that the elasticity imparted to M 241 during the past week which materially improved the production situation, had had a healthy situation in general. From a sentimental standpoint, the meeting of next week plans to be an unusual one, as the salesmen meet to decide whether or not they shall continue or abandon their annual Christmas party—always a feature of the entertainment program. Some of the sales executives are reported to feel that this is not the time to spend time and money in an entertainment of this time and point to the fact that at least one of the series of golf outings was eliminated for this reason, as further evidence that the party should be a "war casualty." Others feel that now, more than ever, something of this kind should be kept up to help in the carrying of a pretty heavy load. At any rate, a decision on this matter will be made at the December 7 meeting at the Hotel Sherman.

Newspaper Trucks in Mileage Reduction

Of interest to certain branches of the paper industry is the note from Harry Gormley, regional ODT director, that newspaper trucks must comply with the mileage requirements as to reductions in mileage, the same as other trucks.

Investments in Industry Viewed Uncertain

Four Basic Factors Involved in Newsprint Production Are Manpower, Electric Power, Pulpwood and Mill Supplies—First Unit of Giant Power Development Now Running — Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., December 7, 1942—Apprehension still exists in Ontario concerning the future of pulp and paper investments. There is still a general belief here that the industry may be required to give up more electrical power and curtail production still more. Many factors enter into the picture. Every deviation from normal practice in the industry has a tendency to add to the per ton cost of production. This in the face of an inflexible price ceiling set long before hostilities began.

The *Financial Post* says that further curtailment in the production of newsprint and other paper supplies can by no means be disregarded, despite the recent action of the government in "freezing" production at the maximum of the average monthly level prevailing between last April and September. The order provides no assurance that production will be maintained at the new level. It is simply a measure taken to stabilize operations as a result of the diversion of labor and power to war industries and the armed forces, and the need to conserve vital materials.

Four Factors are Involved

Four factors are of special importance in considering the likely trend of paper production over the next year. They are manpower, electricity, mill supplies and pulpwood. At the moment, the manpower situation is a little confused. The resignation last week of the general manager of the Anglo-Canadian Pulp and Paper Mills, Ltd., Elliott M. Little, from the Board of Directors of National Selective Service, because, as he claims, of lack of co-operation on the part of the Minister of Labor, and because he lacked power to take the steps he deemed necessary to the maximum use of available manpower, brought many labor organizations to Mr. Little's support in blaming the Minister of Labor. Even critics of the government admit that Mr. Little's proposals were much too bureaucratic, but labor seems to be willing to go all the way out in diverting manpower to the most essential war work.

Seasonal occupational changes have eased the manpower situation considerably since work on the farms has been completed. More men are available for such occupations as lumbering and pulpwood cutting. Industrial development is nearing its peak and when spring work begins again on the land, the labor situation is expected to be acute.

The consumption of electrical energy has been cut by domestic users and non-essential users, but the increased war uses have more than kept pace. Reflecting the first full month of restrictions on the use of electric power, the monthly summary of peak load of Hydro-Electric Power Commission of Ontario for October actually shows a decline of 3% in over-all peak. However, there was a rise in the primary power peak load of 3.3%.

First Big Power Unit Running

Word comes from Montreal this week that the first unit of Canada's largest single hydro power development started running. The second unit is expected to be ready shortly, and before many months the Aluminum Power Company will have its huge Shipshaw plant in full operation. Last Saturday the hydraulic portion of the development on the Saguenay River was completed when almost 100,000 pounds of explosive removed the remains of what had once been a sizable hill separating the river and the powerhouse.

What may be the development of a new and important trend is seen in the preliminary figures on the use of hydro-electric power in Quebec during September. The increase in the use of electricity for commercial purposes has been halted. The gain in domestic consumption has dropped over a third from that reported in the preceding months. Most significant of all, the increase in industrial use was less than half of that recorded in August or July. Power Controller H. J. Symington on September 20, put into force orders restricting the use of electricity for commercial purposes. The order is having the desired effect. The September figures show a decline of 0.8%, whereas the August record shows a gain of 3.1% over 1941 and July showed a gain over last year of 3.9%. A better showing is expected when the October figures are given out.

Mill supplies for the pulp and paper industry are in much the same position as supplies for most other industries. Many items are in short supply and there does not appear to be any way in which the situation can be remedied as long as the present tempo of war activity is continued.

Future Pulpwood Supply Uncertain

Just what the situation is regarding supplies for pulpwood for the next year's curtailed operations is difficult to estimate. The same kind of labor is required for pulpwood operations as is required for lumbering. Canada's timber supply situation over the next six months is said to be serious. Important discussions about the sale and distribution of timber in Canada have been under way. Britain's timber controller has been a recent visitor and Canadian officials have met United States authorities at Washington. In some quarters the timber supply crisis is said to rank even ahead of steel and rubber in terms of its effect on the war program. The backlog of orders which has piled up (many of them for timber urgently needed in war projects of vital nature) is said to far exceed any possible supplies which can be made available in the immediate future. Exports to the U. S. have been more than double the normal figures. Some clarification and further regulation of the entire situation is expected shortly. No one knows how the pulpwood supply may be affected by possible new timber regulations.

Transformer Maintenance

By M. H. Bates, Power Transformer Engineering Dept., General Electric Co.

The attention given a transformer during its first few months in service is very important to assure long life and successful operation.

This may be a jolt to many operators who have felt that a transformer—a static piece of equipment—can be installed and forgotten. Actually, keeping a close check on the initial three months' operation will indicate whether the equipment has been properly installed, and if not, it will reveal any existing or incipient troubles.

Correct installation of the transformer is a matter of mutual interest to both the manufacturer and the purchaser, particularly when a complicated, high-voltage transformer is involved. The nameplate of most transformers cautions the purchaser to read carefully and follow the instructions accompanying the equipment before installing it. In spite of these carefully compiled instructions (perhaps they were not referred to), some strange things are done in installing transformer equipment. For example, one purchaser put a transformer into operation without filling it with oil, which had been shipped separately. Oddly enough, the equipment operated dry for some time without giving any trouble. True, some transformers are given, and take a lot of punishment, but if they are installed properly and thus given a fair chance, they will operate for years on end with the minimum of need for major overhauling. Sometimes good performance is handicapped by installing the transformers in a place where they will be operating under severe conditions. They should not be installed in poorly ventilated rooms, or where they will be exposed to dirt and fumes, or near high-temperature furnaces, or in boiler rooms if they are to give the most efficient, trouble-free operation.

Preoperation Checks

Let us assume that a typical transformer is properly installed, and all connections have been correctly made. Right at that point—even before the transformer is energized—three things should be done:

First, the oil should be checked for proper level at

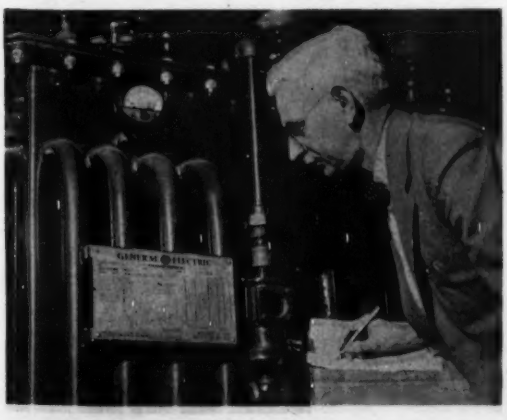

FIG. 1

Check the Transformer's Nameplate and Read the Specific Instructions to Which It Refers Before Installing the Equipment. Gage that Indicates Level of Oil at 25 C. is Above Nameplate on This Transformer.

FIG. 2

On Small Transformers, Look Inside the Tank to Make Sure That the Oil is at the Proper Level at 25 C.

25 C. On small transformers, this means seeing that oil is up to the mark inside the tank. Larger transformers have gages which indicate the proper oil level at 25 C. If it is below this level, the oil may not circulate properly and the transformer may overheat while oil much above this level may overflow when full load temperatures are attained, and cause excessive gas pressure in "sealed" transformers or excessive loss of gas in "gas-seal" transformers.

Second, the ambient temperature should be checked. If the air surrounding the transformer exceeds 40 C (with 24-hour average of 30 C), full load should not be carried, and ASA Standards should be consulted before the transformer is loaded.

Third, dielectric strength of the oil should be checked, taking samples from the top and bottom of all the transformer's oil containers. Some specially designed transformers have as many as five separate compartments containing oil. It is important that a check of the oil in each compartment be made. The standard dielectric strength of oil when shipped is at least 25 kv when tested between 1-inch disks spaced 0.1 inch apart in standard oil test receptacles.

Dielectric Tests

Remember that a dielectric test will be worthless if the oil is not sampled properly. Here are the fundamental precautions for correct sampling:

1. One-quart, clear-glass bottles are recommended for sampling. If a metal container is used, be sure it is free from rust or solder.
2. The bottle must be thoroughly clean and dry. It is usually a good idea to rinse it with clean, dry oil and allow it to drain for a few minutes.
3. Before drawing a sample from the bottom of the tank[1], clean the valve and allow some oil to run off. This can be as much as a quart in the case of a large transformer. This will remove any condensate that may be in the valve.

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4. Stopper or cap the container, and seal it with paraffin or wax immediately after drawing the sample. Do not use rubber or composition of rubber for gaskets or stoppers. If the sample is going to be sent away for testing, pack the bottle carefully to avoid breakage in shipment.

Dielectric strength tests of oil samples should be made each week for the first four weeks that a transformer is in operation. Thereafter, they should be made once every three months for water-cooled transformers, and once every six months to a year for other types, depending on the size and importance of the installation. Water-cooled transformers should be given a more frequent check because of the greater possibility of water leaks inherent in their construction.

Oil that tests 20 kv or less on a dielectric test should be passed through a filter press. In cases where filter press equipment is not needed frequently enough to justify this purchase, the oil can be filtered at the manufacturer's local service shop; or special arrangements can sometimes be made to obtain the equipment to do the job from the local utility company or the manufacturers of transformer equipment. In the filter press process, the contaminated oil is forced through several layers of special filter paper which absorbs the moisture and catches any sediment. Proper filtering of oil in an efficient press will raise its dielectric strength to values between 25 kv and 30 kv. Immediately before using, the filter paper must be thoroughly dried according to the manufacturer's instructions.

For the first three months a transformer is in operation, a frequent check should be made of the oil level (or for evidence of loss of oil if no gage is provided) the ambient temperature, and the oil temperature. Any deviation from normal in these conditions probably indicates some trouble that can be easily rectified.

Transformers that are equipped with a winding temperature indicator should be checked at least twice daily to be sure that "hot spot" temperatures are kept within safe limits. On an ordinary transformer, the maximum coil temperature should not exceed 90 C. If it does, an investigation should be made if the condition exists for more than the permissible overload period. The same thing holds true of the top oil temperature, which should not exceed 85 C for more than a permissible period, as set forth in ASA Guide for Operation of Transformers, C-57.3.

[1] Samples from askerel-filled transformers should be taken from the top through the small valve or plug provided for the purpose.

FIG. 3

Sample Oil in a Pint, Clear-Glass Bottle that is Clean and Dry. Wiping the Valve and Running off Some Oil Before Taking the Sample are Good Preliminary Precautions.

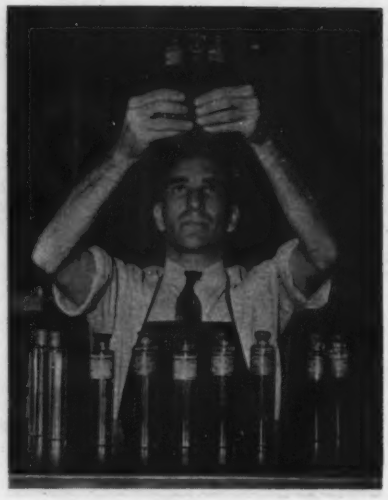

FIG. 4

Color is a Good Indication of the Condition of Oil. Here Sample is Being Checked Against Laboratory Standards. New Oil is Almost Water White; Changes to Color of Lager Beer After 10 or 15 Years' Normal Service.

Condensation

In transformers which are not sealed, thus permitting breathing of the air above the oil level, moisture may collect on the underside of the cover. There are three common causes of this condition: (1) leaky gaskets; (2) cracked or damaged porcelain bushings; (3) restricted breathing. In the first case, a new gasket is required; in the second, the bushing will have to be repaired or replaced; in the third, the breathers must be freed of dirt or other obstructions.

Transformers of this type should have the manhole or main cover removed for inspection after a short initial period of operation and periodically thereafter. If moisture, corrosion, or deposits of any type are found, the causes should be determined and corrected at once.

Removing Moisture

Moisture can be removed in either of two ways with the windings and core immersed in oil. One is by short-circuit drying of the windings; the other is by the so-called normal operation method of drying. The short-circuit method is recommended.

Complete details on methods of drying are contained in the manufacturer's instruction books and should be followed closely. Briefly, the short-circuit method consists of heating the windings and oil by short-circuiting one winding and applying a suitable voltage to the other. Water vapor given off by the hot oil is carried away by ventilation and filtration.

The normal operation method is only applicable to transformers that normally permit breathing of air, and is accomplished mainly by forced or natural ventilation, and partially by filtration, while the transformer is in operation. Although this method can

The Permutit Company
New York

Office Memorandum

To: Technical Staff From: Field Re: Pulp & Paper Mills

Recently the [redacted] mill at [redacted] found large lumps of discolored calcium carbonate scale mixed into and ruining the pulp. It came from the bleach tanks, where the caustic bleach reacted with the calcium alkalinity of the water, forming incrustations on the walls and breaking loose, at intervals, in solid chunks.

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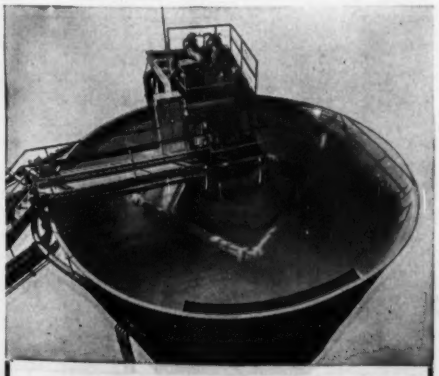

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WATER CONDITIONING HEADQUARTERS

be used without shutting down the transformer, it should be used only in dry weather and if it is not feasible to remove the transformer from service for applying the short-circuit method.

A method of drying with the windings and core not immersed in oil and, preferably, enclosed in a temporary housing is the forced air method. It consists of forcing clean, dry air at a temperature of 85 C. into the coils and insulation at the bottom of the transformer, allowing the air to escape at the top. This method is preferable for rectangular shell-type units because of their mass of solid insulation. Large quantities of air are required for a thorough drying job. The oil is dried separately by a filter press.

Oven drying is another method that can be used if necessary. This method entails removing the core and coil assembly from the tank and drying it in an oven, as the name implies. Still another method is the natural draft method, in which heated air is allowed to circulate through the transformer by natural draft. Source of the heat may be resistance grids or a steam coil. There is a potential fire hazard in all types of hot-air drying if oil drips on the heat source or if the temperatures are not carefully controlled.

Usually, it is the safest practice to obtain recommendations regarding the drying of a large transformer from the nearest office of the manufacturer. Requests for this information should mention the serial number of the transformer with the voltages and kva available for drying, and also indicate whether any step-up or step-down transformers are available.

Chemical Tests of Oil

Color of the oil may indicate an abnormal condition. New transformer oil has very little color when viewed through a clear bottle approximately 1½ inches in diameter. After ten or fifteen years in a normally operated transformer, oil should be no darker in color than lager beer. Oil that is approaching the stage where sludging may result will be slightly reddish in color. The darker it becomes, the worse its condition. Sludging in transformers built during the last 20 years is rare. This is because of better over-all design of modern transformers.

Oil that is badly discolored or sludged should be subjected to a chemical test. Most transformer manufacturers will make this test for a nominal fee[3], furnish a report on the condition of the oil, and make recommendations regarding any servicing required. Ordinarily, the oil is given the following tests:

1. Specific gravity
2. Viscosity
3. Dielectric strength
4. Neutralization (acidity)
5. Color (according to National Petroleum Ass'n Standards)

FIG. 5
In Replacing the Cover Use Drift-Pins to Guide It to the Proper Position for Bolting so that Further Movement that Might Endanger the Gasket Will Not Be Necessary.

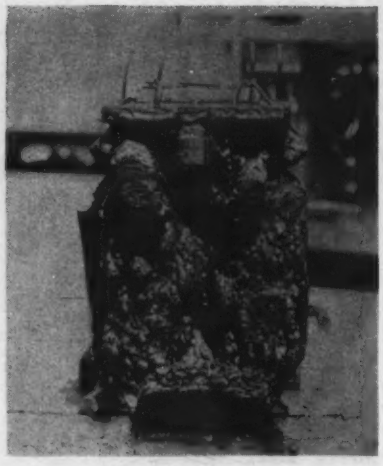

FIG. 6
Don't Let Your Transformers Get in This Condition. Replaced by a Larger Transformer After About 30 Years' Service, This Unit was Still Functioning in Spite of Extreme Sludging Found Covering the Core and Coil Assembly When It Was Removed from the Tank.

Cooling Water Temperature

On water-cooled transformers, the incoming and outgoing water temperatures should be checked weekly during the initial installation period and every three months thereafter. Cooling water going into the transformer should not have a temperature of more than 25 C., and the temperature of the outgoing water should not be more than 10 degrees higher. If there is a rise in temperature of more than 10 degrees, the amount of water supplied may be insufficient. If this rise is less than 10 degrees at the specified rate of flow, there is a possibility of scale forming within or of oil sludge deposit on the outside of the coil. Thermometers installed permanently on the ingoing and outgoing water connections will facilitate these temperature checks. If the transformer has multiple cooling coils, the flow of water through each section should be adjusted so that the temperature rise in each one is the same.

Cleaning Cooling Coils

Scale and sediment can be removed from a cooling coil without removing the coil from the tank. First, disconnect both inlet and outlet pipes from the water system and temporarily pipe the coils to a point several feet away from the transformer. Next, blow or siphon all water from the coil, and pump it full of a solution of equal parts of hydrochloric acid and water. Leave one end of the coil partially open to prevent abnormal pressure which may otherwise result from the chemical action. Let the solution stand in the coil for an hour and then flush it out with clean

[3] G. E. charges $2.

water. Repeat the operation if all the scale is not removed the first time.

An oil deposit may form on the outside surface of the cooling coils in a water-cooled transformer after it has been in service for many years, especially if operating temperatures have been high. Obviously, this decreases the efficiency of the coil and results in higher oil temperatures. To remove oil deposits the coil should be removed from the tank and scraped with a small, flexible chain.

Spare Transformers

Time and expense will be saved if spare transformers are kept in readiness for instant use. It must be remembered, however, that the spare transformer requires maintenance just the same as the transformer in operation. Once every six months, the oil level and its dielectric strength should be checked. Tight gaskets and breathing through a dehydrating breather, properly maintained, will help maintain the oil dielectric. On conservator-type transformers, oil should be kept in the conservator at all times. Watch the oil gages of such transformers when subzero temperatures exist. Checking these items regularly is the only way to be sure that the spare transformer will be ready for use when it is needed.

Delaware Valley Hears Whitaker

The Delaware Valley Section of the Technical Association of the Pulp and Paper industry held its regular monthly meeting at the Engineers Club, Philadelphia, Pa., December 4, 1942, with John Davis presiding.

H. E. Whitaker, deputy director, Pulp and Paper Division of the War Production Board, described the new WPB setup, the Controlled Materials Plan, and other matters dealing with war production problems.

With reference to the new WPB setup, the Pulp and Paper Branch has been made a Division in order to facilitate the handling of problems of the pulp, paper, and paperboard industry with relation to war effort. The Division has the problem of balancing supplies in the industry which involves difficulties in procurement of wood and maintaining pulp against an increasing demand of products: pulp, paper, and paperboard for essential needs, both in the war and civilian life.

Mr. Whitaker gave a brief description of the work of the War Products Development Section of the Pulp and Paper Division which is under the direction of J. G. Strange. The Section's duties consist of evaluating specifications and requirements of the procurement agencies and centralizing information for assistance in industry development of these new war products.

The Pulp and Paper Division has the benefit of men from the industry, working on a consulting basis, and many men from all branches of the pulp and paper industry included on the many Advisory Committees to help the Division's staff. There are some 200 of these men, representing a broad cross section of the pulp, paper, and paperboard industry who lend their judgment and experience in the solution of the war problems of the industry.

Mr. Whitaker discussed the Controlled Materials Plan with reference to its application to critical metals next year. The fact that the requirements for the three metals—steel, copper, and aluminum—are to be balanced with the known supply, in itself, insures that the necessary supplies will be available for use to meet projected production schedules. The work of the major claimant agencies—Army, Navy, etc.—was described, and the methods to be used in arriving at requirements and establishment of the allocations were discussed. In this connection the part played by the Pulp and Paper Division was described in detail.

Among those present were: H. E. Whitaker, A. E. Waugh, E. N. Poor, J. W. Voller, M. B. Pineo, J. L. Ober, Alex McInnes Jr., Miss Louise McGrath, W. H. Lapp, Miss Lois V. Hans, E. , Albert, P. C. Baldwin, M. G. Benson, Miss Dorothy Beiswinger, A. L. Bixler, S. W. Blanchard, A. F. Bowers, Richard T. Bingham, S. G. Briser, Alan R. Boyd, Price Brooks, C. M. Connor, J. D. Davis, D. S. D. Dieffenderfer, J. C. Dieffenderfer, Paul Easton, Jacob Edge, C. B. Glover, Jesse Good, George B. Martin, John Roslund, W. K. Schlottenbeck, John R. Shallcross, E. A. Shallcross Sr., John B. Shields, Wm. M. Shoemaker, Chas. A. Shubert, Richard U. Temple, George M. Suydaw, R. B. Thomas, and Vincent Waters.

Former Paper Men Speak in Boston

BOSTON, Mass., December 7, 1942—At a Christmas Party of the Bookbuilders, an organization to which a number of members of the paper industry belong, held at Schrafft's West street restaurant Tuesday evening, twelve servicemen were present as guests, a portion of whom had previously been identified with the paper trade.

Commander A. L. Madden, of the U. S. Navy, one of the speakers, mentioned starting as a stock boy with Carter Rice & Co., corporation. He spoke of Lieutenant Edward H. Sussenguth, also of the Navy, who was a guest and was formerly in charge of the Boston office of the American Writing Paper Company.

Other speakers were Lieutenant Colonel Melvin L. Krulevitch of the Marines, and Major Nevels Pearson, of the Army. All the speeches were impromptu and expressive of appreciation of the hospitality of the Bookbuilders, but otherwise, largely in the lighter vein.

Besides these officers, Lieutenant Commander A. M. Austin and Lieutenant Louis W. Monroe of the Navy, Colonel Harold C. Pierce, Captain Charles T. Hagan, and Captain Ara J. Miller of the Marines, and Major A. A. Schardt, Lieutenant Wendell E. Phillips, and Lieutenant Ferdinand Troeger of the Army, were guests.

Seventy-nine members and guests attended, with Robert F. Thompson, of D. C. Heath, chairman of the Bookbuilders, presiding.

Michigan Div. to Meet December 17

The next meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Association will be held on Thursday, December 17 at the Park-American Hotel in Kalamazoo. Dinner will be served at 6:30 P.M.

Harry G. Specks, vice-president and general manager of the Eastwood-Nealley Corporation of Belleville, N. J., will speak on "Handling of Fourdrinier Wires—a Critical Material." All key plant operating and maintenance men are cordially welcomed to attend.

Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 9, 1942 — The Government Printing Office announced the following awards for paper: Cauthorne Paper Company will furnish 18,010 pounds of white sulphite writing paper at 6.13 cents per pound; R. P. Andrews Paper Company will furnish 2,550 sheets of blue safety writing paper at 24.5 cents per pound; Graham Paper Company will furnish 81.361 pounds of 50% rag white map paper at 14.11 cents per pound; Barton, Duer & Koch Paper Company will furnish 99,450 pounds of 50% rag yellow index paper at 10.19 cents per pound; and Eastern Corporation will furnish 160,000 pounds of yellow sulphite writing paper at 6.87 cents per pound.

W. A. Johns Paper Company will furnish 3,145 pounds of manila paper at 11 cents per pound; Mudge Paper Co. will furnish 56,600 pounds of buff 25% rag ledger paper at 10.06 cents per pound; Old Dominion Paper Company will furnish 28,600 pounds of white sulphite manifold paper at 7.725 cents per pound; Cauthorne Paper Company will furnish 150,000 pounds of poster paper at 6.15 cents per pound; Cauthorne Paper Co. will also furnish 200,000 pounds of white sulphite writing paper at 5.65 cents per pound; North American Pulp and Paper Corporation will furnish 200,000 pounds of white sulphite writing paper at 6 cents per pound; and Barton, Duer, & Koch will furnish 5,000 pounds of backlining paper for casemaking at 4.69 cents per pound.

Walker-Goulard-Plehn Company, Inc., will furnish 43,100 pounds of 50% rag blue index paper at 10.98 cents per pound; the latter company will also furnish 40,750 pounds of 25% rag white ledger paper at 10.37 cents per pound; and 28,836 pounds of white 25% rag ledger paper at 9.94 cents per pound.

Paper Corporation of US will furnish 36,600 pounds of 25% rag white ledger paper at 10.49 cents per pound; Collins Manufacturing Company will furnish 29,234 pounds of 25% rag white ledger paper at 9.94 cents per pound; R. P. Andrews Paper Company will furnish 1,810 sheets of white sensitized paper at $52.80 per M.; Marquette Paper Corporation will furnish 18.073 pounds of 25% rag white bond paper at 12.25 cents per pound; and also 27,562 pounds of 25% rag white bond rag paper at 12.25 cents per pound.

D. L. Ward Paper Company will furnish 366,000 pounds of white sulphite ledger paper at 6.68 cents per pound; the latter will also furnish 517,500 pounds of white sulphite ledger paper at 6.68 cents per pound.

R. P. Andrews Paper Company will furnish 191,784 pounds of white offset book paper at 7.80 cents per pound; Marquette Paper Corporation will furnish 26.052 pounds of yellow sulphite writing paper at 7.09 cents per pound; Barton, Duer & Koch Paper Company will furnish 35,860 pounds of white sulphite writing paper at $6.09 per cwt.; Mudge Paper Company will furnish 94.500 pounds of yellow 50% rag index paper at 10.56 cents per pound; Butler Company will furnish 500,000 sheets of white gummed paper at $10.83 per M.; The Aetna Paper Co. will furnish 150,000 sheets of white maxwell offset paper at 7.27 cents per pound; the Whitaker Paper Company will furnish 10,868 pounds of white 25% rag ledger paper, air dried, at 11.81 cents per pound; and the Whitaker Paper Company will also furnish 21,294 pounds of white 25% rag ledger paper at 11.81 cents per pound.

The Barton, Duer & Koch Paper Company will furnish 33,370 pounds of cream bristol paper at 5.92 cents per pound; Finch, Pruyn & Co. will furnish 219,352 pounds of newsprint at 2.975 cents per pound; Barton, Duer & Koch Paper Co. will furnish 86,625 pounds of machine finish book paper at $6.75 per cwt.; the latter will also furnish 102,675 pounds of machine finish book paper at $7.00 per cwt.; and also 22,788 pounds of white sulphite writing paper at $6.93 per cwt.

Frank Parsons Paper Company will furnish 550,000 pounds of white sulphite writing paper at $6.48 per cwt.; Walker-Goulard-Plehn Co., Inc., will furnish 50,000 pounds of white sulphite writing paper at 6.45 cents per pound; and also 150,000 pounds of white sulphite writing paper at 6.45 cents per pound.

Paper Corporation of US will furnish 43,000 pounds of salmon sulphite writing paper at 8.15 cents per pound; R. P. Andrews Paper Company will furnish 512,000 pounds of white sulphite writing paper at 8.14 cents per pound; Barton, Duer & Koch Paper Company will furnish 716,800 pounds of white sulphite writing paper at 8.25 cents per pound; The Barton, Duer & Koch Paper Co. will furnish 240,000 pounds of cream bristol board at 6.75 cents per pound; and also 279,908 pounds of cream bristol paper at 6.75 cents per pound.

Bulkley, Dunton & Co. will furnish 71,550 pounds of white sulphite writing paper at 7.35 cents per pound; the latter will also furnish 36,285 pounds of white sulphite writing paper at $7.35 per cwt.; and 51,648 pounds of white sulphite writing paper at $7.25 per cwt.

Crocker, Burbank Papers, Inc., will furnish 11.025 pounds of 50% white litho finish fluorescent chart paper at 35 cents per pound; The Aetna Paper Company will furnish 12,322 pounds of white 25% rag bond paper at 11.60 cents per pound; and also 314,800 pounds of white rag bond paper at $11.82 per cwt.; Caslon Press will furnish 12,000 sheets of partial release of chattel mortgage for $41.20; The Aetna Paper Company will furnish 10.322 pounds of salmon 25% rag bond paper at $13.93 per cwt.; Bradner, Smith & Company will furnish 19,092 pounds of salmon sulphite writing paper at $7.10 per cwt.; and Bermingham & Prosser Paper Company will furnish 93,873 pounds of white sulphite bond paper at $7.29 per cwt.

Wilcox-Walter Furlong Paper Company will furnish 38,184 pounds of buff sulphite writing paper at $7.05 per cwt.; Eastern Corp. will furnish 216,000 pounds of white sulphite writing paper at 6.85 cents per pound; D. L. Ward Company will furnish 61,160 pounds of yellow sulphite writing paper at $7.62 per cwt.; Paper Corporation of US will furnish 500,000 pounds of machine finish book paper at 9.36 cents per pound; and Barton, Duer & Koch Paper Company will furnish 17,500 pounds of 50% rag buff index paper at 10.75 cents per pound.

Barton, Duer & Koch Paper Company will furnish 86,200 pounds of 50% rag buff index paper at 10.75

A SIGN *of Strength*

Slowly it seems to anxious eyes, but in reality more swiftly than her enemies ever thought possible, America is gathering her strength to strike. And as she moves forward into the world struggle, the qualities that have made her great become more and more apparent. Her vast natural resources, her disciplined efficiency, her tremendous energy and confidence born of freedom—these are the things that will make her as successful in war as she has been in peace.

To Americans, Niagara has always been a sign of this strength, epitomizing in its great Falls the resources, the energy and the freedom in which we take pride. In its beauty, too, the beauty of the American ideal is symbolized. It is one of the many unique natural wonders that express the active and potential power of a free people whose progress is derived from the exercise of their own abilities in a land of opportunities.

We who work within sight and sound of Niagara Falls are devoting every ounce of our energies and facilities to speeding the flow of chemicals for Victory.

CAUSTIC POTASH · CAUSTIC SODA
PARA · CARBONATE OF POTASH
LIQUID CHLORINE

FROM THE ORIGINAL BY DAVID FREDENTHAL . . . IN NIAGARA ALKALI COMPANY'S COLLECTION OF PAINTINGS OF NIAGARA FALLS

Niagara ALKALI COMPANY
60 EAST 42nd STREET, NEW YORK, N. Y.

An Essential Part Of
America's Great
Chemical Enterprise

cents per pound; Bermingham & Prosser Co. will furnish 187,000 pounds of yellow sulphite bond paper at 7.374 cents per pound; and Paper Corporation of US will furnish 174,200 pounds of white sulphite manifold paper at 8.11 cents per pound.

R. P. Andrews Paper Company will furnish 603,460 pounds of white sulphite index paper at 7.37 cents per pound; Whiting Paper Company will furnish 32,707 pounds of 25% rag white ledger paper at $11.98 per cwt.; and the latter will also furnish 53,300 pounds of 25% rag yellow bond paper at $11.98 per cwt.

Cauthorne Paper Company will furnish 23,595 pounds of 25% rag white bond paper at 11.44 cents per pound; Walker-Goulard-Plehn Co. will furnish 19.224 pounds of white offset book paper at 6.85 cents per pound; Barton, Duer & Koch Paper Co. will furnish 26,000 pounds of yellow sulphite writing paper at 7.5 cents per pound; Wilcox-Walter-Furlong Paper Company will furnish 22,624 pounds of white sulphite writing paper at $6.85 per cwt.; Marquette Paper Corporation will furnish 414,000 pounds of white sulphite writing paper at 7.10 cents per pound; and Frank Parsons Paper Co. will furnish 503,000 pounds of white machine finish book paper at $6.35 per cwt.

Marquette Paper Company will furnish 114,660 pounds of machine finish book paper at 7 cents per pound; and also 162,500 pounds of white sulphite manifold paper at 8.63 cents per pound. Paper Corporation of US will furnish 400,000 pounds of white sulphite writing paper at 6.87 cents per pound; Mudge Paper Company will furnish 35,100 pounds of 25% rag white ledger paper at 10.33 cents per pound; and Marquette Paper Corp. will furnish 1,067,000 pounds of white sulphite manifold paper at 8.50 cents per pound.

R. P. Andrews Paper Company will furnish 262,095 pounds of white sulphite writing paper at 7 cents per pound; and also 415,584 pounds of cream postcard at 5.91 cents per pound; the Mudge Paper Co. will furnish 1,500 pounds of krinkle paper at 8.35 cents per pound; and Barton, Duer & Koch Paper Co. will furnish 200,000 pounds of white sulphite writing paper at 6.49 cents per pound.

Safety Section Elects Officers

The Paper and Pulp Section of the National Safety Council elected the following officers recently at its annual meeting in Chicago:

General Chairman—Roland W. Richardson, The Gardner-Richardson Company, Lockland, Ohio.

Vice-Chairman in Charge of Membership—J. Fred Berry, Alton Box Board Company, Alton, Ill.

Secretary—L. R. Simpson, The Brown Paper Mill Company, Inc., Monroe, La.

Program Committee—L. R. Simpson (Chairman), The Brown Paper Mill Company, Inc., Monroe, La. Ernest Augustus, The Mead Corporation, Chillicothe, Ohio; O. R. Hartwig, Crown Zellerbach Corporation, Portland, Oregon; H. P. Heubner, The Flintkote Company, New York, N. Y.; B. J. McClosky, Hoberg Paper Mills, Green Bay, Wis.

News Letter Editor—Julius A. Draper, Consolidated Paper Corporation, Ltd., Grand-Mere, P. Q., Canada.

Contest Committee—A. Scott Dowd (Chairman), Gritz Publications, Inc., Chicago, Ill.; B. D. Rogers, Bird & Son, Inc., East Walpole, Mass.; F. H. Rosebush, Nekoosa-Edwards Paper Company, Port Edwards, Wis.

Data Sheet Committee—E. F. Troop (Chairman), P. H. Glatfeller Co., Spring Cove, Pa.; D. J. Brett, Jr., National Container Corp., Jacksonville, Florida; A. S. Cook, Quebec Pulp & Paper Safety Assn., Quebec, Canada; J. J. Hastings, Port Huron Sulphite & Paper Co., Port Huron, Mich.; W. P. Place, Kieckhefer Container Co., Delair, N. J.; L. C. Smith, Thilmany Pulp & Paper Co., Kaukauna, Wis.

Engineering—Safe Practices Committee—E. A. Page (Chairman), Kimberly-Clark Corporation, Neenah, Wis.; E. G. Amos, American Paper and Pulp Association, New York, N. Y.; M. W. Dundore, Beloit Iron Works, Beloit, Wis.; James W. Towsen, West Virginia Pulp and Paper Corporation, New York, N. Y.; A. J. Tuccinardi, The Ohio Boxboard Co., Rittman, Ohio; H. H. Yoder, Gulf States Paper Corporation, Tuscaloosa, Ala.

Health Committee—Dr. Louis H. Frechtling (Chairman), Champion Paper & Fibre Company, Hamilton, Ohio; Mrs. Lillian Brewer, Oswego Falls Corporation, Fulton, N. Y.; Jane Notley, R.N., Allied Paper Mills, Kalamazoo, Mich.; Dr. James D. Stark, Hammermill Paper Company, Erie, Pa.

Statistics Committee Chairman—Fred W. Braun, Employers Mutuals, Wausau, Wis.

Logging Operations Representative—J. E. Cantin, Quebec North Shore Paper Company, Baie Comeau, P. Q., Canada.

Paper Products Plants Representative—A. J. Basile, Lawrence Paper Company, Lawrence, Kans.

Safety Instruction Card Committee—R. W. Croucher (Chairman), Minnesota and Ontario Paper Company, International Falls, Minn.; G. J. Bienvenu, Gaylord Container Corporation, Bogalusa, La.; J. C. Fitzgerald, Bowater's Newfoundland Pulp and Paper Company, Ltd., Corner Brook, Newfoundland. John C. Lavin, St. Croix Paper Company, Woodland, Maine; C. J. Munk, Racquette River Paper Company, Potsdam, N. Y.; Arthur E. Winslow, Hollingsworth & Whitney Company, Waterville, Maine.

Visual Education Committee—George Gibb (Chairman), Canadian International Paper Co., Gatineau, Que., Canada; R. A. Day, A. P. W. Paper Company, Albany, N. Y.; W. G. Etter, River Raisin Paper Company, Monroe, Mich.; J. R. Latter, Anglo-Canadian Pulp and Paper Mills, Ltd., Quebec, Canada; Don E. McDowell, Kalamazoo Vegetable Parchment Company, Parchment, Kalamazoo, Mich.; D. T. Meany, New Brunswick International Paper Company, Dalhousie, N.B., Canada; D. A. McAlary, Fraser Companies, Ltd., Edmundston, N. B., Canada.

W. L. Neubrech Heads Paper Unit

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 9, 1942—The Industrial Economy Division of the Bureau of Foreign and Domestic Commerce has again been reorganized into industrial divisions, and W. LeRoy Neubrech is head of the Pulp and Paper Unit.

The Bureau for many years was set up on a commodity basis, but a couple of years ago a new director, devoted to theory, broke up the commodity divisions which now have been re-established.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending December 5, 1942

STOCKS

	High	Low	Last
A. P. W.	1⅝	1⅝	1⅝
Armstrong Cork Co.	30⅞	29¾	29⅞
Celotex Corp.	7½	7¼	7¼
Celotex Corp., pf.	71¼	70	71
Certain-Teed Products Corp.	2⅞	2¾	2¾
Certain-Teed Products Corp., pf.	32¼	30⅝	30⅝
Champion Paper & Fibre Co.	....	....	....
Champion Paper & Fibre Co., pf.	100	100	100
Congoleum Nairn Co.	17	16⅜	17
Container Corp. of America	15½	15	15½
Continental-Diamond Fibre Co.	7	6½	6⅝
Crown-Zellerbach Co.	11	10¾	10¾
Crown-Zellerbach Co., pf.	80	79¾	80
Dixie-Vortex Co.	9⅛	8⅞	9
Dixie-Vortex Co.—A.	37	36½	37
Flintkote Co.	15⅞	15	15⅛
Robert Gair	1⅞	1⅜	1⅞
Robert Gair, pf.	9⅜	9⅛	9⅜
International Paper Co.	8⅛	7¾	8⅛
International Paper Co., pf.	44¾	43½	44½
Johns-Manville Corp.	68	66½	67
Johns-Manville Corp., pf.	129	129	129
Kimberly Clark Corp.	26	25¾	25¾
MacAndrews & Forbes	19	18½	19
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	32½	29	32
Mead Corp.	6¼	6	6
Mead Corp., pf.	56	56	56
Paraffine Companies, Inc.	35½	32¼	35½
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	8⅞	8½	8½
Rayonier, Inc., pf.	25½	25⅜	25½
Ruberoid Co.	19½	19⅛	19¼
Scott Paper Co.	38	37¼	37¼
Scott Paper Co., pf.	113	113	113
Sutherland Paper Co.	25⅜	24½	25⅛
Union Bag & Paper Corp.	7¾	7⅛	7¾
United Paperboard Co.	3⅛	3	3
U. S. Gypsum Co.	61¾	58¾	60⅞
U. S. Gypsum Co., pf.	174	174	174
West Virginia Pulp & Paper Co.	12½	12⅛	12½

BONDS

Abitibi Pulp & Paper Co. 5s '53	48½	48½	48½
Celotex Corp. 4½s '47	98½	98½	98½
Certain-Teed Products Corp. 5½s '48	93¾	92½	93½
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	105¼	104¾	104¾
International Paper Co. 5s '47	103	102⅞	102⅞
Mead Corp. 4½s '55	....	....	....
West Virginia Pulp & Paper Co. 3s '54	103¼	103¼	103¼

New York Curb Exchange

High, Low and Last for Week Ending December 5, 1942

STOCKS

	High	Low	Last
American Box Board Co.	....	....	....
Brown Co., pf.	....	....	....
Great Northern Paper Co.	26	25½	25½
Hummel-Ross Fibre Corp.	3⅛	3⅛	3⅛
National Container Corp.	8¾	8¼	8½
St. Regis Paper Co.	1½	1⅜	1½
St. Regis Paper Co., pf.	120	119	119
Taggart Corp.	3½	2⅞	3½

BONDS

American Writing Paper Co. 6s '61	87½	87	87½

Bathurst Profits Lower

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., December 7, 1942—The report of the Bathurst Power and Paper Company, of Bathurst, N. B., for the nine-month period ending September 30, 1942, indicates a reduction in the profits in the third quarter of the year.

It is understood that the profits for the third quarter were adversely influenced by abnormally low water conditions resulting in severe curtailment of power generated by the company's hydro-electric plant, necessitating the use of steam-generated power at a materially higher cost, coupled generally with higher raw material costs, notably wood.

For the nine months ended September 30, 1942, profits were $1,213,294, subject to audit and year-end adjustments, after depreciation and depletion but before providing for Dominion income and excess profits taxes. This compares, after adjusting depreciation by the proportion of the additional amount absorbed in the last quarter of 1941, but before providing for Dominion taxes, with $1,121,469 for the nine-month period ended September 30, 1941. Dominion income and excess profits taxes are being accrued at assumed rates aggregating 40%, but the final liability for such taxes is uncertain and an adjustment of the tax provision may be necessary before or at the end of the year, it is stated. The company's tax liability for the years 1940 and 1941 likewise is subject to final determination by the Income Tax Division of the Department of National Revenue.

Indicated profit for the third quarter of the year was $332,014, basis as above, as compared with $476,266 a year ago. In the first half of the year the figures had been, respectively, $881,282 and $645,203.

Crown-Zellerbach Nets $1

The Crown-Zellerbach Corporation and its subsidiaries report for the six months ended on October 31, a consolidated net profit of $3,594,048, equal, after preferred dividend requirements, to $1 each on 2,261,199 shares of common stock. This compares with $4,611,770, or $1.45 a common share the year before.

Taxes on income for this year's period were $3,999,377, including $1,938,278 in excess profits taxes provided. Taxes for the six months of 1941 amounted to $4,005,674.

Consolidated net sales were $41,275,754 and $41,795,866 respectively.

Gaylord Container Loses

The Gaylord Container Corporation and subsidiary for the September quarter, reports net profit, after $187,000 estimated taxes on income, without allowing for credit for post-war refund, was $300,476, equal to 44 cents each on 539,221 common shares after preferred dividend payments. This compares with $453,828, or 71 cents a common share, for September quarter a year ago. Nine months: Net profit, after $2,325,600 estimated taxes on income, was $843,988, or $1.19 a common share, against $1,059,868, or $1.57 a common share, last year.

Ruberoid Earns $1.15

The Ruberoid Company reports that its 85-cent dividend declaration on the capital stock, 1942 payments amount to $1.15, compared with $1.75 distributed last year.

Continental-Diamond Votes Dividend

The Continental-Diamond Fibre Company has declared a dividend of 15 cents which lifts 1942 payments to 65 cents a share, against $1 distributed in 1941.

TAPPI Notes

The midwinter joint meeting of the Kalamazoo Valley TAPPI and the Michigan Superintendents Division will be held at the Park American Hotel, Kalamazoo, Michigan, on Thursday evening, January 7, 1943. Last year nearly four hundred attended the joint meeting.

John B. Calkin, formerly of the Dennison Manufacturing Company, is now in the research department of the Brown Company, Berlin, N. H.

Duncan S. Brown of the Gardner-Richardson Company and secretary-treasurer of the TAPPI Ohio Section, was married on December 5, at the United Brethren Church in Middletown, Ohio, to Miss Beulah Long of Middletown.

The TAPPI Pacific Section will meet at Longview, Wash., on January 5, 1943.

H. Edwin Davis, formerly maintenance engineer for the Maxson Automatic Machinery Company, is now at the U. S. Naval Training Station, Newport, R. I.

Charles J. DiCarlo, formerly of the Wrenn Paper Company, is now in Gadsen, Ala., with the 1st Reg. Co. I, 3rd C. W. S. Training Battalion, Camp Sibert.

Walter F. Reynolds, formerly of Hollingsworth and Whitney, Mobile, Ala., is now a chemist for the Dixie-Vortex Company, Easton, Pa.

Boonyium Meesook is now a research associate in chemistry at the Massachusetts Institute of Technology.

Neil F. Robertson, formerly of the Scott Paper Company, is now a research chemist for the Crossett Lumber Company, Crossett, Ark.

Ernest Erickson, 230 Park avenue, New York, N. Y., is offering for sale the following two books by Dard Hunter "Old Papermaking"—$130.00 and "Primitive Papermaking"—$80.00. Both are collector's items and in excellent condition.

To conserve travel the Empire State Section of TAPPI will hold four regional meetings at Niagara Falls, Watertown, Syracuse and Glens Falls, N. Y. Dates will be announced soon.

The International Printing Ink Company tendered a luncheon at the Waldorf-Astoria, New York, N. Y., on December 1st to Senorita Alasuida Fernandez, winner of the graphics arts essay contest for Latin-American students. The title of her essay was "Why American Understanding Can Be Aided by the Printed Word."

The TAPPI Lake States Section will meet at the Conway Hotel, Appleton, Wis., on Tuesday, December 15. The speaker will be Ernst Mahler, vice president of the Kimberly-Clark Company, Neenah, Wis., who will discuss "The Effect of the War on the Pulp and Paper Industry."

Boothby Fibre Can Co. Sold

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., December 7, 1942—The Boothby Fibre Can Company's plant at Roxbury, Mass., has been sold to the Continental Can Company and is to be known as the Boothby Fibre Can Division. The personnel remains th same as previously. The Boothby concern manufactures paperboard containers for ice cream, oysters, delicatessen food, beer, etc.

WAR OR NO WAR
ARMY E NAVY
AWARDED BAUER BROS. SEPT. 4, 1942
FOR VICTORY BUY UNITED STATES WAR SAVINGS BONDS AND STAMPS
Every pulp and paper mill should understand that the BAUER DOUBLE DISC PULPER will convert various rejects and screenings into valuable and saleable products.
Economical recovery of waste materials is important
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The BAUER BROS. CO.
SPRINGFIELD, OHIO

CONSTRUCTION NEWS

Under limitations order L-41 all projects involving expenditures of more than $5,000 must be specifically approved by the War Productions Board. The status of projects reported herewith under the provisions of the order is not known.—EDITOR.

Mount Vernon, Ohio.—The Shellmar Products Company manufacturers of converted cellophane products, has approved plans for new addition to main plant at Mount Vernon. General erection contract has been awarded to William H. Koenig, 228 North LaSalle street, Chicago, Ill., and work on superstructure will be placed under way at early date.

Long Island City, New York—The Equitable Paper Bag Company, Inc., 47-02 31st place, Long Island City, manufacturer of paper bags and containers, has leased the industrial building on local site at 23-49 Boarden avenue, and will use for general expansion.

Green Bay, Wis.—The Green Bay Box Company, 1406 South Broadway, manufacturer of stiff paper boxes and containers, has completed plans for new addition to plant for expansion in production division. Erection contract has been awarded to Selmer Company, Northern Building, Green Bay, and work will begin soon. Harry W. Williams, Northern Building, is architect.

Chicago, Ill.—The Vogue Right Studios, Inc., 469 East Ohio street, converted paper products, has leased the entire building at 237 East Ontario street, totaling about 25,000 square feet of floor space, and will occupy for expansion.

Haverhill, Mass.—Haverhill Boxboards, Division of Robert Gair Company, Inc., manufacturer of box board, chip board, news board, etc., sustained a fire loss recently in part mill. No official estimate of loss has been announced, but reported as slight.

New Haven, Conn.—The New Haven Pulp and Board Company, East street, manufacturer of chip board, box board and kindred paper board products, has work under way on alterations and improvements in mill, for which general contract recently was let to C. W. Blakeslee & Sons, Waverly street, New Haven, as previously announced in these columns. No estimate of cost has been announced.

San Francisco, Calif.—The Crown Zellerbach Corporation, 343 Sansome street, is maintaining a capacity production schedule at its various mills, given over to different lines of paper products, with exception of plants at Port Angeles and Port Townsend, Wash., in Puget Sound district, where operations have been curtailed to about 75 per cent of capacity. This change is brought about by restrictions of WPB on quantity of logs which pulp and paper mills in that area may consume. It is expected to hold to present basis of output at all plants for an unlimited period.

Wooster, Ohio—The Steel Storage File Company, Wooster, which recently discontinued the manufacture of metal filing equipment on account of war restrictions, has leased the local Allegheny-Arrow Building, and will occupy for new plant for the manufacture of corrugated board files of various kinds. It is expected to take over property and install equipment at once. Former local plant of company has been leased to other interests for production of ordnance. Walter Regenhardt is president.

New Haven, Conn.—The York Waste Material Company, 75 York street, waste paper, etc., has approved plans for rebuilding of portion of storage and distributing building, recently damaged by fire, and will proceed with work at once.

SUPPORT MANPOWER CONSERVATION

(Continued from page 7)

have been with the company 25 years or more. The new members are Henry Maes, John Wodjenski, Otto Wendland, Emil Gordiana, Harold Stegeman and Roman Foegan.

Albert Klammer, who has been with the company 36 years, was elected president to suceced Michael Gerharz, an employee since 1900. Arthur M. Schmalz and Mr. Gerharz were named vice-presidents, and William Voie was reelected secretary.

Welcomed by Karl E. Stansbury

The newcomers were welcomed by Karl E. Stansbury, president, who presented them with their membership pins. E. H. Jennings, vice-president in charge of sales, reviewed the government OPA order curtailing paper production. C. R. Seaborne, vice-president in charge of production, spoke on "Manpower Problems and Women in Industry." Entertainment was furnished by Dr. R. C. Finkle, amateur magician. The club will hold its next meeting in March.

Kimberly Co. Union Holds Meeting

The general election of the Kimberly Mill Workers Union, made up of employees of Kimberly-Clark Corporation's mill at Kimberly, Wis., Wednesday of last week resulted in the choice of Ray Haase for president to succeed Otto Hannemann, and George Truscott for vice-president to succeed Harry Kokke. Bernard Spaay was reelected treasurer, and Norbert Jansen, secretary. Three new directors were elected, Melvin Schnese, representing the machine room, Norbert Jansen the calendar room, and Anthony Van Gompel the materials department. All other department representatives were reelected.

Neenah Co. Workers Plan Party

Employees of the Neenah Paper Company, Neenah, Wis., are planning a Christmas party Sunday, December 20, at Germania hall, Menasha, Wis. There are 310 men and women who will take part. A dinner will be held, followed by entertainment. Earl Williams is chairman of the entertainment committee.

Industrial Appliances Get Patents

Paper and Industrial Appliances, Inc., 122 East 42nd Street, New York, N. Y., announce that United States Brammer Control Patents Nos. 2,302,326 and 2,302,327 have been issued to them.

Scott Co. Announces Promotions

CHESTER, Pa., December 7, 1942—More than a score of Delaware County men received promotions in the creation of a new general staff, and the reorganization of Scott Paper Company's Chester operating departments, according to an announcement from the office of William F. Mohan, first vice president of the company. The new general staff has been created to correlate policies and to advise with the personnel of all Scott Paper plants on engineering and manufacturing problems. The staff will be headed by William S. Campbell, vice president of plant operations.

Charles M. Howell, who has been plant manager at Chester, will be director of staff engineering under the new set-up. He will be assisted by Robert C. Alexander, who has been superintendent of the finishing department. Harry M. Ostertag has been appointed to the new staff as director of mechanical development. His assistants will be Wesley S. Corbin, manager of the finishing development department, and Francis O. Boylan, paper mill development engineer.

Harry Liebeck and P. D. Parsons, designers and engineers for the Scott Paper Company for many years, will be senior consultants on the new staff. Forest W. Brainard becomes staff technical director, assisted by K. W. Britt, head of the general research department. A new department, products standards, will be included in the general staff, with John B. Hay as director.

Changes in the manufacturing organization at the Chester plant include the promotion of Harrison F. Dunning to be assistant to the vice-president in charge of plant operations. He has been manager of the Glens Falls, N. Y., mill. He had previously been attached to the Chester plant, at which time he lived in Swarthmore.

Paul C. Baldwin has been promoted to head the Chester technical division. He has been manager of pulp testing.

Ralph Knoll has been promoted to assistant technical director in the Chester manufacturing organization. Special engineering, under W. F. Holl, has been transferred to the plant engineering division.

Carl Stevens has been promoted to the post of purchasing agent. Oliver Rose, an engineer in the construction department, has been transferred and promoted to purchasing assistant.

The creation of the new general staff and the changes in the Chester manufacturing organization will increase the operating effectiveness of all Scott plants and result in higher qualities, lower manufacturing costs and increased stability of employment for all members of the organization, Mr. Mohan's announcement stated.

Gilbert Co. Crowns Paper Queen

APPLETON, Wis., November 30, 1942—Crowning of the paper queen was the unique feature of the annual workers' party of the Gilbert Paper Company held at Germania hall, Menasha, Wis., Sunday evening, November 22. Approximately 500 attended.

The honor went to Miss Gladys Trader, who was selected by vote of the employees. Nine others were selected as attendants. They were guests at a banquet preceding the party, served at Hotel Menasha.

"Replaced Two Pumps Costing Ten Times as Much,"

says Cellufoam Products Division of the Masonite Corporation about the

R & M MOYNO PUMP

Here's Cellufoam's Production Manager, Otto J. Krueger, with his Moyno Pump. Read what he says about it!

"After 3½ years' experience with the R & M Moyno Pump, we are pleased to report that its performance in handling stock for Cellufoam has been very satisfactory.

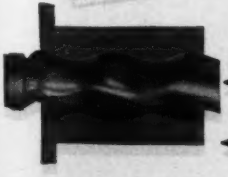
"*It replaced two pumps costing ten times as much, and is doing a far better job.* Maintenance costs have been phenomenally low—and the Moyno is so simple in design that when repairs eventually become necessary, it can be taken down and reassembled in about 30 minutes.

"*Because of our success with it, we think of the Moyno first when-ever other tough pumping jobs come up,* and consequently installed a second one recently to pump a supplementary material."

Before installing the R & M Moyno, engineers of the Cellufoam Products Division of the Masonite Corporation were using *two* "special" pumps to handle the 3% Kraft stock used in making their "Cell-U-Blanket" insulation. The two pumps cost TEN TIMES as much as the Moyno, and were necessary so that one could operate while the other was being repaired.

The Moyno, however, not only does this pumping job *better* in every way, but it has cut maintenance costs to an all-time low because of its amazing resistance to wear and its easy accessibility. Also, its smooth, *metered* delivery has helped improve product quality.

Investigate the R & M Moyno Pump! It's self-priming and positive in displacement—handles size, coating and stock without turbulence or cavitation. Write for Folder 1833!



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Here's the patented principle of the R & M Moyno Pump's amazing performance. A single-threaded helical rotor revolves within a stationary double-threaded helical stator, providing pumping action like that of a piston moving through a cylinder of infinite length.

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PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Henry J. Berger

EDITOR

Vol. 115 December 10, 1942 No. 24

COMING EVENTS IN PAPER INDUSTRY

American Paper and Pulp Association, Sixty-sixth Annual Convention and meeting, Waldorf-Astoria Hotel, New York, February 15-19.

Technical Association of the Pulp and Paper Industry, Convention, Commodore Hotel, New York, February 15-18.

National Paper Trade Association of the United States, Convention, Waldorf-Astoria Hotel, New York, February 15-18.

The New York Association Of Dealers In Paper Mills' Supplies, Annual Banquet, Commodore Hotel, New York, Tuesday, February 16.

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

PRICE CONTROL AND STABILIZATION

The chief underlying causes of upward pressure on the price level remain uncorrected, declares the current issue of The Guaranty *Survey*, published by the Guaranty Trust Company of New York. "These measures," the comment continues, "have strengthened the prospect of general stability under wartime stresses, and provision is now made for greater governmental authority over food prices and wage rates, the two price categories in which the basis of control was glaringly weak under the former system. But the new law and administrative rulings cannot be regarded as bringing assurance of stability. There are still important limitations on authority over farm prices; the wise and resolute exercise of powers over wage rates will continue to present great practical difficulties; adequate coordination among the agencies concerned does not yet appear to have been achieved and the entire program of price control must be adjusted and, if necessary, coordinated to the imperative need for maximum productivity."

The comment continues: "To what extent price stability can be achieved and maintained in the face of these complexities, only experience can show. The degree of success will depend very largely on the firmness and skill with which the program is administered and on the cooperation of business and the general public in supporting this vitally important effort. Among the specific measures that would aid in achieving the required balance between purchasing power and supply are a broadening of the tax base and the adoption of a comprehensive rationing system, not confined to a specified list of commodities but covering the sum total of individual purchases,—that is, a rationing of aggregate civilian expenditure. A broader tax base could take the form of lower exemptions and higher rates in the lower income-tax brackets, a general sales tax, a payroll tax or some system of compulsory savings. The exact form is of secondary importance. What is urgently needed is to find some means of reaching the great mass of surplus purchasing power in the hands of the people whose incomes are increasing while the avenues of expenditure open to them are diminishing. Such a step would be politically unpopular and, in normal times, socially undesirable, but in the present emergency it is an indispensable part of any well-rounded plan of price stabilization."

Pointing out that the great bulk of the untaxed purchasing power is in the hands of wage-earners and it is there, and not elsewhere that the really effective measures to close the gap between purchasing power and supply must be taken, *The Survey* goes on to say that "taxes on corporations have already risen to the point where net earnings are on the decline, despite the enormous increase in volume of output. Taxes on individuals in the higher income brackets have reached confiscatory levels and cannot be expected to yield appreciably more than at present. Even if further large increases in these tax categories were possible they would not solve the problem."

In commenting on the possibility of further advances in prices and wages *The Survey* states in part: "The new plan by no means excludes all possibility of further advances in prices and wages. The parity limitation on farm price ceilings still stands, and these ceilings must be raised when such action is necessary to increase production for war purposes or to compensate for increases in the cost of farm labor. Wage rates can still be raised in order to correct inequities, aid in the effective prosecution of the war, or offset advances in the cost of living under the formula of the War Labor Board. Federal fiscal policy, moreover, has not yet been fully enlisted in the stabilization drive. Even after the enactment of the $8 billion tax measure passed last month, there remains a wide gap, estimated at $15 billion or more, between swollen spendable incomes and the reduced volume of goods available for purchase by civilian consumers. As long as this gap is allowed to exist, a strong upward pressure on the price level will continue to present a constant menace to the success of any effort at direct price regulation."

Discussing the aspect of price equilibrium, *The Survey* states that, "The task of price-control authorities is not merely to stabilize prices but to stabilize them at such relative levels that individuals and groups will be encouraged to work at maximum intensity and in the essential occupations. In view of

this necessity, it is clear that complete rigidity of prices and wages is neither possible nor desirable. The power given stabilization officials to make adjustments 'to aid in the effective prosecution of the war' is necessary to the maintenance of the price balance that represents the only available substitute for total and universal compulsion."

In reference to further steps that appear to be required, *The Survey* says in part that, "One of the most important remaining steps essential to a sound stabilization program lies in reaching an adjustment between civilian purchasing and the supply of goods and services available for civilian use. Responsibility for price stabilization is still divided among several agencies—the Office of Price Administration, the War Labor Board, the Economic Stabilization Director, the Treasury and to a lesser extent, other offices. With such a division of authority, the formulation of a comprehensive and integrated stabilization plan is difficult if not impossible."

Australia Cuts Newsprint Use

WASHINGTON, D. C., December 2, 1942—A voluntary offer made by metropolitan newspapers in Australia to cut consumption of newsprint by a further 20 percent was accepted by the Australian Government, for a period of six months, starting April 1, 1942. It was stated at the time that with existing stocks, assisted by Australian newsprint from the Tasmanian Mills, Australian newspapers might be able to continue on a restricted basis for approximately two years, according to a report received by the Department of Commerce. Overseas supplies have practically ceased.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1942		Corresponding Weeks—1941	
October 24	91.6	October 25	106.4
October 31	92.9	November 1	108.6
November 7	89.9	November 8	105.0
November 14	89.6	November 15	107.0
November 21	87.5	November 22	105.3
November 28...(Prelim.)	*83.5*	November 29	107.7

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1941	85.6	89.7	92.2	96.0	98.7	99.3	94.2
1942	104.5	103.9	102.9	100.4	95.3	87.4	75.8

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1941	101.0	99.7	105.2	106.2	100.4	97.4
1942	80.8	82.9	90.8	*87.1*	....	....

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941	1942
Year to Date.	69.8	79.8	82.6	71.3	82.6	86.0	97.0	*91.6*
Year Average.	69.9	80.4	79.8	71.5	83.4	85.6	97.4	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1937	83	89	89	91	88	80	69	77	72	70	57	47	75
1938	56	63	63	60	60	59	59	60	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	82	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	*82*	..	..

Week ending Oct. 24, 1942—81
Week ending Oct. 31, 1942—84
Week ending Nov. 7, 1942—84
Week ending Nov. 14, 1942—83
Week ending Nov. 21, 1942—83
Week ending Nov. 28, 1942—77

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

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Continental Uncompressed Black meets the most stringent requirements for ease of dispersion and intensity of coloring. Accepted throughout the paper industry, you can depend upon it to be of the highest quality —and consistently uniform.
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This new Continental Special Condensed Black offers advantages in cleanliness, ease of handling, and, because of its extra soft structure, assures good dispersion and retention. Continental P Black is lower in cost and is being used with satisfactory results.
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Continental specializes exclusively in the production and servicing of carbon black. A pioneer in introducing new and better methods of control, it has been responsible, in a great measure, for the constantly rising standards of quality found in this product. You are invited to take advantage of the experience of our technical staff in using Continental Carbon Blacks.

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With Penchlor Acid-Proof Cement you can get brick-lined equipment into service without delay because this tough, long-lasting sodium silicate cement offers these advantages: Quick-setting and self-hardening—easily handled—no heating required—no drying delays—no acid treatment.

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Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
Edited by R. G. Macdonald, Secretary

Tub-Sizing Difficulties*

By Walter G. Hendrich[1]

Abstract

A series of variable factors and their subcharacteristics are outlined in a tabulation.

The intent of the paper is not to give facts or data on research done for special effects wanted, but to bring order into a discussion of groups with mutual interests in the results desired, and the difficulties experienced in this field.

Introduction

The majority of difficulties in the technique of tub-sizing in the paper industry are caused by improper coordination of the following factors and their subcharacteristics as outlined in Table I. The multitude of shifts by changing one of these factors under columns A, B, or C from the operator's standpoint, plus another change in effects wanted by the ultimate user of the product, shows clearly the cause of most difficulties. It is not conceivable to prescribe certain A, B, and C specifications, because the results wanted under D vary widely with each mill, depending on the products and their use requirements. In many cases of the latter, an extremely loose conception prevails in the trade and published specifications, where very often the material to be used for tub sizing is given but not the quality thereof.

The purpose of this chart (Table I) is to clarify some of these difficulties and possibly be a form for setting up specifications for each individual mill for its specific purpose. Most of these data are available without great trouble in each mill, but an overall picture of the whole technique, when trouble arises, is usually forgotten.

It is well to remember that a proper analysis of effects wanted in the final product is the first requirement in a study of the subject. If those qualities are known and can be expressed numerically, the technologist can work out check tests which can be applied on the finished product and also in the process. Some of these are outlined under column D.

The fibrous web to be sized has to be produced on a basis in which its many qualities do not interfere with the proper processing of the sheet. Many results of little consideration given to this point are on the market wherein a paper of maximum water resistance is wanted—e. g., the paper is sized in the beater to such an extent that practically no benefit is derived from the tubsizing bath, except for an increase of brittleness which is not wanted at all. Had this paper been beater-sized to a lesser degree, and the proper surface sizing been applied in the right manner, less brittleness and still higher water resistance would have been the result.

The choice of tub-sizing material during this emergency is of so much greater variety, that it should be relatively easy to find the proper type for the proper purpose. Economy in this field during the emergency, by choosing less essential glues or replacing them with starches; using lower specification raw materials to start out with, and avoiding through more careful preparation of the sizing liquid as to waste and amounts made up; unnecessary loss or degradation as to quality to the paper mill and the national reserve of materials can be avoided.

Equipment varies greatly in different mills and as a rule more controllable variables are on hand than are used. It is well to make the operator conscious not only of soak or pick-up temperature of sizing and draw regulation, but also of various immersion times and speeds, press angles, weights on presses, crown and density of rolls, circulation of sizing liquid, and drying intensity to which the paper is finally subjected. A good check might be a burst test on the wet tub-sized sheet for the effect these operations have had on the paper.

B. Irregular Sizing Effects Over Sheet Area

Variations in the following affect the sizing over the sheet area (*see* Table I under Operating Difficulties):

A. 1. The density of the unsized sheet—difference due to entrapped air in the fibrous web, preventing the size from penetrating.
   2. Beater or previous sizing effectiveness over sheet area.
   3. Paper web moisture variations before entering size tub, causing varying soak over sheet area.

B. 1. Solids per gallon in size tub area.
   2. Viscosity due to temperature in size tub.
   3. Separation of sizing liquid into jell and water causing spotty sizing effects.

C. 1. The texture of press roll due to hardened films of sizing material.
   2. Web friction on carrying rolls in tub causing difference in absorption.
   3. Speed at time of immersion.
   4. Direct heating system causing degradation of size in some areas.
   5. Circulation of size in tub.
   6. Evaporation of water in drying on web not uniform.

Most of these twelve reasons given for these operating difficulties can be described as soak troubles, but rarely corrected in such collective term manner.

* Presented at the Fall Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Statler, Boston, Mass., Sept. 29-Oct. 1, 1942.

[1] Member TAPPI; Plant Manager, Byron Weston Company, Dalton, Mass.

This war emergency with various requirements in the "paper as substitute" age will make our tub-sizing equipment more valuable than ever. It will help us find new products and markets in which to venture. From a waste standpoint, it is one of the most sound operations in the paper mill. There is little raw material waste as compared to beater or other high-dilution additions; little power required, lower evaporation cost of conversion water, great flexibility at low cost, and broad application possibilities.

The intent of this paper is not to give facts or data on research done for special effects wanted, but to bring order into a discussion of groups with mutual interests in the results wanted and difficulties experienced in this field.

TABLE I

OPERATING DIFFICULTIES	• A. Weight Variations	• B. Irregular sizing effects over sheet area	• C. Cockle Variations	• D. Wrinkles	• E. Foam flares or other sizing material marks	• F. Brittleness	• G. Softness	• H. Fuzz	• I. Case Hardening (Splitting)	• J. Adhesion or stickiness of size material	• K. Destruction of beater sizing	• L. Destruction of color	• M. Odor in Paper
A. Web to be Sized													
Type Fiber	..	..	..	..	..	×	..	×	•	•	•	•	•
Substance Weight	×	..	×	..	..	..	..	×	×	..	..	..	..
Mil. Thickness or Density (Entrapped air)	..	×	×	..	..	..	..	×	×	×	..	..	..
Finish Texture	..	..	..	..	..	..	..	..	..	..	..	..	..
Type Sizing	..	×	×	..	..	×	×	×	×	×	×	..	..
Penetration	×	×	×	..	..	×	..	×	×	×	×	..	..
Porosity	..	..	..	..	..	..	..	..	..	..	..	..	..
Moisture Percentage	×	..	..	..	..	..	..	..	..	..	..	..	..
Absorption	×	..	..	..	..	..	..	..	..	..	..	..	..
Uniformity of web	..	..	×	..	×	..	..	..	..	..	..	..	..
B. Tub-Sizing Materials													
Animal Size	..	..	..	..	..	..	..	..	•	•	•	•	•
Starch	..	..	×	..	..	..	..	..	..	..	..	..	×
Resin	..	..	..	..	..	..	..	..	..	..	..	..	×
Others	..	..	..	..	..	..	..	..	..	..	..	..	..
Solids per Gallon	×	..	..	..	..	..	..	..	..	..	..	..	..
Degree Be.	..	..	..	..	..	..	..	..	..	..	..	..	..
Viscosity	×	..	..	..	..	..	..	..	..	..	..	..	..
Gel Strength	..	..	×	..	..	..	..	..	..	..	..	..	..
Colloid	..	..	..	..	..	..	..	..	..	..	..	..	..
Mixture	..	..	..	..	..	..	..	..	..	..	..	..	..
Temperature	×	×	×	..	..	..	..	..	..	..	..	..	×
Preservatives	..	..	..	..	..	..	..	..	..	..	..	..	..
Alum	..	..	..	..	..	..	..	..	..	..	..	..	..
Formaldehyde	..	..	..	..	..	..	..	..	..	..	..	..	..
Phenol Derivatives	..	..	..	..	..	..	..	..	..	..	..	..	..
Zinc Compounds	..	..	..	..	..	..	..	..	..	..	..	..	..
Acidity or Alkalinity	..	..	..	..	..	..	..	..	..	..	..	..	..
C. Equipment													
Type Press	..	..	..	..	..	..	..	..	•	•	•	•	•
Number of Rolls	..	..	..	..	..	..	..	..	..	..	..	..	..
Material	..	..	..	..	..	..	..	..	..	..	..	..	..
Density	..	..	..	..	..	..	..	..	..	..	..	..	..
Crown	..	..	..	..	..	..	..	..	..	..	..	..	..
Texture	..	..	..	..	..	..	..	..	..	..	..	..	..
Wet Pack	..	..	..	..	..	..	..	..	..	..	..	..	..
Double Sizing	..	..	..	..	..	..	..	..	..	..	..	..	..
Press Angle	..	..	..	..	..	..	..	..	..	..	..	..	..
Spray Pressure	..	..	..	..	..	..	..	..	..	..	..	..	..
Web Friction in Size Tub	..	..	..	..	..	..	..	..	..	..	..	..	..
Speed (Time of immersion)	×	×	×	..	..	..	..	..	..	..	..	..	..
Direct or	..	..	..	..	..	..	..	..	..	..	..	..	..
Indirect Heating of Liquid (Degradation)	..	..	..	..	..	..	..	..	..	..	..	..	..
Volume of Tub	..	..	..	..	..	..	..	..	..	..	..	..	..
Circulation	..	..	..	..	..	..	..	..	..	..	..	..	..
Draw Regulator	..	..	..	..	..	..	..	..	..	..	..	..	..
Drying	×	×	×	..	..	×	..	..	..	..	..	..	..
Contact Machine-Drying	..	..	..	..	..	..	..	..	..	..	..	..	..
Air-Drying	..	..	..	..	..	..	..	..	..	..	..	..	..
Loft-Drying	..	..	..	..	..	..	..	..	..	..	..	..	..
Vacuum-Drying	..	..	..	..	..	..	..	..	..	..	..	..	..
D. Effects Wanted													
Strength Increase	..	×	..	..	..	..	..	..	..	..	..	..	..
Burst	..	..	..	..	..	..	×	..	..	..	..	..	..
Fold	..	..	..	..	..	×	×	..	..	..	..	..	..
Tensile	..	..	..	..	..	×	×	..	..	..	..	..	..
Stiffness	..	..	..	..	..	×	×	..	..	..	..	..	..
Surface Sizing	×	×	×	×	..	..	×	..	..	..	..	..	..
Writability	×	×	×	..	..	..	×	×	..	..	..	..	..
Printability	..	×	..	..	..	..	×	×	..	..	..	..	..
Ruling	..	×	..	..	..	..	×	×	..	..	..	..	..
Impregnation	×	×	..	..	..	..	×	×	..	..	..	..	..
Sensitizing	..	..	×	..	..	..	×	×	..	..	..	..	..
Moistureproofing (Water Vapor)	..	..	..	..	..	..	..	..	..	..	..	..	..
Waterproofing	..	..	..	..	..	..	..	..	..	..	..	..	..
Oil and Greaseproofing	..	..	..	..	..	..	..	..	..	..	..	..	..
Erasure, Type of	..	×	..	..	..	..	..	..	..	..	..	..	..
Surface Effects	..	×	..	..	..	..	..	..	..	..	..	..	..
Fancy Felt Marking	..	..	..	..	..	..	..	..	..	..	..	..	..
Embossing	..	..	..	..	..	..	..	..	..	..	..	..	..
Finish	..	..	..	..	..	..	..	..	..	..	..	..	..
Weight Increase	×	×	..	..	..	..	..	..	..	..	..	..	..
Soak % Pick-up	•	•	•	•	•	•	•	•	•	•	•	•	•

Mechanization of Paper Packaging*

By Charles Stevens[1]

Abstract

Mechanized packaging is a means to increase the rate of wrapping packages to permit the utilization of personnel efficiently and to release some to perform other work where reduced personnel has been caused by the needs of the war effort and selective service.

Uniformity of the packages and reduction in the amount of wrapping paper are the natural results of a mechanical operation with the wrapping machine. Data are given on the production rates obtained with the wrapping machine.

Among the many problems incurred as a result of an universal emergency as it affects the paper industry, there should be no inclination to minimize that of packaging as the final preparation of the product for merchandising. New problems of efficiency are constantly coming up for attention. Therefore, it is well to turn attention towards the packaging department because here it is purely a problem involving simple labor that is urgently needed elsewhere.

Up to this point the product has been brought along efficiently. Now, however, the manufacturer is faced with the task of final preparation of the product for shipment, display, and marketing. This task is intensified many times as a direct result of labor conditions, production facilities, and material shortages. Much can be accomplished in the packaging departments where so much labor, auxiliary facilities, and materials are consumed. Therefore, it is feasible that some form of mechanization be adopted that will relieve the tension that is brought about by the heavy demands upon production equipment, labor, and materials.

As far as the packaging of paper products is concerned, it may be granted that some form of wrapping offers the most satisfactory means of protection. Yet, to accomplish this manually, as has been the universal practice, critical items are wasted. Mechanized packaging by wrapping is the only means whereby the conservation of all auxiliary equipment may be effected. It is the means to eliminate the waste of packaging materials and labor. It is the only system that will streamline the entire process all the way through from manufacturing to shipping carrier. It is further essential that the packaging operation be confined in a minimum area to complete the entire job in view of the need for every available unit of space.

In further congealing these points to means and methods for the proper application of mechanical packaging comes the consideration that the package must present the maximum in product protection and merchandising appeal.

When turning towards direct material savings, wrapping must certainly head the list rather than the use of formed or otherwise fabricated containers. The wrapping material preparation must be simple and in such a way as to efficiently utilize every available unit of area. Preparation into sized sheets for manual wrapping requires time, labor and auxiliary equipment. Left-overs and unnecessary laps must be eliminated.

To effect the maximum in material conservation, means for mechanically supplying from a roll the correct amount of wrapper for each package must be employed.

In order that a wrapped package of superimposed sheets of loose paper be secure, a combination of the contents and its enclosing wrapper must unite to form a rigid package. First, the sheets must be squarely stacked and held thus while the wrapper is secured around them. Secondly, the stack must be compressed to expel the air from between the sheets while in the process of wrapping and sealing. By this method an article that has no rigidity within itself is transformed into a solid block. Secure sealing further protects the package from distortion.

Absolute protection to the contents must also involve sealing against the infiltration of dust and dirt. If moisture content control is sought, secure sealing becomes further essential. Protection in storage against crushing or distortion is best accomplished by a square, tightly sealed package. No flaps or strips of tape must be present on the flat surface of the sheets to emboss under the pressure of high piling. Square packages stack into a smaller storage space and require less cartoning material to prepare the product for shipment.

The importance of appearance cannot be overlooked. The package must present the maximum in eye appeal after all handling in getting it to the user.

This must all be accomplished at a marked saving in labor as well as time when our normal trade, Government and Ordnance agencies urgently need our product. Space and auxiliary plant equipment must be spared of the task of packaging to make way for production expansion in normal and diversified activities.

Does it then appear practicable to permit packaging operations where only simple labor is employed to limit output and offset all gained in essential savings elsewhere? To mechanize this phase of the production line is the last step in streamlining the operation of paper manufacture and finishing.

It can only be a normal trend that full mechanical means be pursued to put our packaging problems behind us. By employing a compact and highly productive wrapping unit, facilities are freed for work on other vital necessities as will best assist a united effort in this emergency.

Such a compact and highly productive wrapping unit is the Morrow-Stevens wrapping and sealing machine which is widely used. A brief description of this unit may serve to clarify certain points about it:

The unit is compact, self-contained, and fully enclosed. It is entirely automatic in its operation from supplying the correct amount of wrapping material

* Presented at the Fall Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Statler, Boston, Mass., Sept. 29-Oct. 1, 1942.

[1] The Morrow Mfg. Co., care of the Maxson Automatic Machinery Co., Westerly, R. I.

from roll stock to ejecting completely wrapped and sealed packages onto the cartoning bench. The packages, as they come from the unit, are dry and ready for finish packing.

The blocks or reams of paper are slid into a loading magazine provided. From this point on, the mechanisms act in timed sequence relation to complete the wrapping, sealing, and ejecting without further attention.

The operation is so set up that the loading magazine holds three reams, one behind the other. In this way, the operator pushes the line into feeding position. When the first ream reaches the proper point, the unit automatically starts and continues until the package is completed. It will again automatically stop if no stock is in the feeding position. But, if stock is kept constantly in the magazine, the unit will continue to run without interruption in the wrapping and sealing of one package after the other. This feature is embodied to compensate for possible loss of time by the operator in getting reams to the feeding position. A thousand reams may be fed into the unit and wrapped consecutively without interruption —then the operator may, for example, walk away and return several minutes later and resume feeding without touching the machine's controls in the meantime.

The methods employed to guide the ream through the unit in the process of feeding, wrapping, sealing, and ejecting are self-jogging. The stack is thus maintained square and even.

The stack held compressed under several hundred pounds pressure while the wrapper is sealed around it expels the air from between the sheets and prevents wrinkling of the wrapper when it is later stacked. The square package, with no superfluous wrapper or flaps, stacks evenly in storage and cartons.

Sealing the end flaps against the end of the ream presents a neater appearing package at a marked saving in wrapping material. Actually, this saving amounts to over 25%. This also leaves no flaps, edges, or strips of tape on the top or bottom of the stack to emboss the outer sheets of the contents.

The softest or cockled papers may be sealed into a rigid block by securely holding the stack in the process of wrapping and sealing.

With a capacity in bulk of ¾ inch to 5 inches, a sealing range of 500-sheet count of 7 pounds to 1000-sheet count of 20 pounds low-finish stock is permitted.

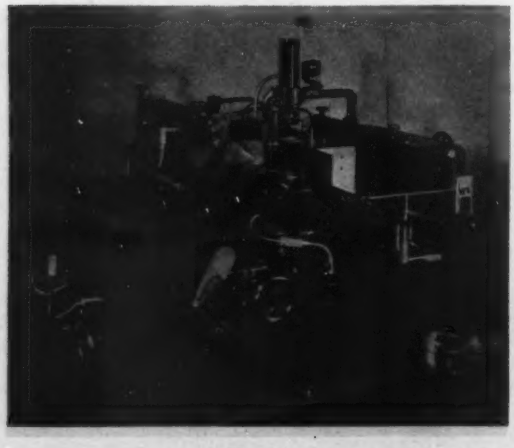

FIG. 1
Automatic Wrapping and Sealing Machine

The operation is sequence timed and electrically controlled so that the completion of one operation starts the succeeding operation. The actuating force is compressed air acting through cylinders and the resiliency of the force prevents jamming. The sequence timing further insures positive smooth action.

The adhesive used is a commercial grade of vegetable paste and its cost is negligible in comparison with other means of sealing.

The rated production capacity is 900 packages per hour in sizes from 8 inches by 10 inches through 8½ inches by 14 inches, inclusive; and operation records reveal overall efficiency of 95 to 115%. In one mill, production records indicate 6000 to 6400 packages per day (8 hours overall time) in above size range. Another mill reports 95,000 pounds in 21 hours per day continuous duty month after month. Another reports a total cost of sealing cut sizes of 9c per 100 pounds, including wrapper, glue, labor, depreciation, maintenance, interest, etc.

In another mill, one girl feeds the machine, one girl labels the packages as they travel up the chute —one girl fills the cartons and one man piles the cartons and trucks them away. This crew of girls floats and each girl is on one particular job 15 minutes.

Another user reports a saving of 36 to 40 workmen each 21 hours on the wrapping and packnig operation alone. This user has increased his sheet cutting in the streamlined operation resulting from the wrapping and sealing unit.

Wrapper roll lengths recommended for use on the wrapping and sealing machine, Type 1-C are given in Table I.—intermediate lengths are recommended as best for safety and appearance.

TABLE I

Bulk, inches Size 8 in. x 10 in.	Wrapper Roll Length, inches	Bulk, inches Size 8½ in. x 14 in.	Wrapper Roll Length, inches
¾	11½	¾	15½
⅞	11¾	⅞	15¾
1	12	1	16
1⅛	12¼	1⅛	16¼
1¼	12½	1¼	16½
1⅜	12½ to 12¾	1⅜	16½ to 16¾
1½	12½ to 13	1½	16½ to 17
1⅝	12⅝ to 13⅛	1⅝	16¾ to 17⅛
1¾	12¾ to 13⅜	1¾	16¾ to 17⅜
1⅞	12⅞ to 13¾	1⅞	16⅞ to 17¾
2	13 to 14	2	17 to 18
2⅛	13⅛ to 14⅛	2⅛	17⅛ to 18⅛
2¼	13¼ to 14⅜	2¼	17¼ to 18⅜
2⅜	13⅜ to 14¾	2⅜	17⅜ to 18¾
2½	13½ to 15	2½	17½ to 19
2⅝	13⅝ to 15⅛	2⅝	17⅝ to 19⅛
2¾	13¾ to 15⅜	2¾	17¾ to 19⅜
2⅞	13⅞ to 15¾	2⅞	17⅞ to 19¾
3	14 to 16	3	18 to 20
3⅛	14⅛ to 16⅛	3⅛	18⅛ to 20⅛
3¼	14¼ to 16½	3¼	18¼ to 20½
3⅜	14⅜ to 16¾	3⅜	18⅜ to 20¾
3½	14½ to 17	3½	18½ to 21
3⅝	14⅝ to 17	3⅝	18⅝ to 21
3¾	14¾ to 17	3¾	18¾ to 21
3⅞	14⅞ to 17	3⅞	18⅞ to 21
4	15 to 17	4	19 to 21
4⅛	15⅛ to 17	4⅛	19⅛ to 21
4¼	15¼ to 17	4¼	19¼ to 21
4⅜	15⅜ to 17	4⅜	19⅜ to 21
4½	15½ to 17	4½	19½ to 21
4⅝	15⅝ to 17	4⅝	19⅝ to 21
4¾	15¾ to 17	4¾	19¾ to 21
4⅞	15⅞ to 17	4⅞	19⅞ to 21
5	16 to 17	5	20 to 21

The above table shows the data on wrapper roll lengths for the two extremes of sizes accommodated and gives the fractional bulks for same.

Maximum outside diameter of wrapper roll accommodated is 20 inches. Inside diameter of core is 3 inches. Any style core may be used without caps or slots. A quick change shaft is provided.

Multiple-Specimen Neenah Expansimeter

By J. A. Van den Akker,[1] Carleton Root[2] and Willmer A. Wink[3]

Abstract

An improved form of the Neenah expansimeter is described and detailed drawings are given. Using the new device, determinations of hygroexpansivity may be made simultaneously for twenty test specimens. Auxiliary equipment for the control of relative humidity is described.

Introduction

A simple, accurate, and highly sensitive device for measuring the hygroexpansivity of paper and other materials which exhibit change in dimensions when the moisture content is changed has recently been described *(1)*. The original Neenah expansimeter was designed to accommodate two test specimens. In view of the fact that the determination of hygroexpansivity is intrinsically slow, it was found desireable to construct an instrument which would enable one to perform measurements on many specimens simultaneously. Such an instrument, designed to accommodate twenty specimens, was constructed late in the summer of 1940. Since then this instrument has proved to be so accurate, reliable, simple, and fast in use that a brief description was believed to be of possible interest.

Photo and Detailed Drawing

A photograph of the instrument with auxiliary equipment is given in Fig. 1, and detailed drawings are shown in Figs. 2 and 3. An effective system for controlling the relative humidity in the system is shown in the schematic drawing of Fig. 4.

The main frame of the instrument is welded 1.5-inch angle iron. As shown in the front and side views given in Figs. 2 and 3 an inner base for the spirit level vials is furnished by welding into the frame a suitable length of channel iron. (The angle iron and channel iron should, of course, be selected for quality and straightness.) Not shown in the drawings are four 5 13/32-inch lengths of angle iron which complete the rectangular box. The frame is mounted upon a ¾ by 16 by 30¾-inch base of "Benalite." Between the frame and base is a shallow "pan," the purpose of which will be evident later. A ¼-inch steel plate, bolted to the frame, forms the top of the instrument. The front and back and the two ends are covered with fairly heavy plate glass. The glass windows provide excellent visibility, and are so mounted that they may be easily removed or put into place. An adequate degree of airtightness is obtained by employing a refrigerator door rubber gasket between the frame and the glass windows. The gasket is sealed to the frame. The previously mentioned pan serves to hold the bottom edges of the glass plates against the gasket. (In the installation of a glass plate, the bottom edge is put in place first, and then the plate is pushed toward the frame.) Threaded metal ears arranged at the top of the instrument serve to hold the top edges of the windows against the rubber gasket. Since the back and two end windows are rarely ever removed, their seals are rendered airtight by painting with a self-setting rubber compound known as "Airvulc." In order that the whole instrument may be leveled at will, the base is supported on two adjusting legs and one fixed leg after the manner of mounting an analytical balance, and the top plate of the instrument carries an extremely sensitive circular spirit level (of sensitivity about 45 seconds of arc[4]). It will be appreciated that the glass and metal construction makes negligible any effects due to surface adsorption of moisture and cannot cause error of the sort observed in an instrument where hygroexpansivity of the structural elements is not negligible.

As shown in Fig. 2, each of the twenty specimens is suspended from a rod which bears up against a micrometer screw. The specimen supports, in turn, one end of a small spirit level vial (of sensitivity about 45 to 60 seconds of arc per division.[4]). The other end of the vial is supported as shown in Figs. 2 and 3 by a short length of 0.003-inch steel ribbon, so that a vertical motion of the lower end of a specimen causes the level vial to tilt. With the lower end of the specimen held at constant elevation by means of the level vial, change in length is measured at the top, and is read to the nearest 0.0001 inch with the micrometer.

The metal supporting members clamped at each end of a vial have weights chosen in such manner that very little force is required to lift the end of the vial supported by the specimen. If it is desired to place the specimen under an appreciable tension, the required force is obtained by placing a suitable weight on the connecting link between the lower end of the specimen and the level vial. For some purposes the weight of the clamps shown in Fig. 2 may be objectionably large. The clamps may then be replaced with T hooks of the form given in Fig. 5, made from light-gage phosphor-bronze wire. These

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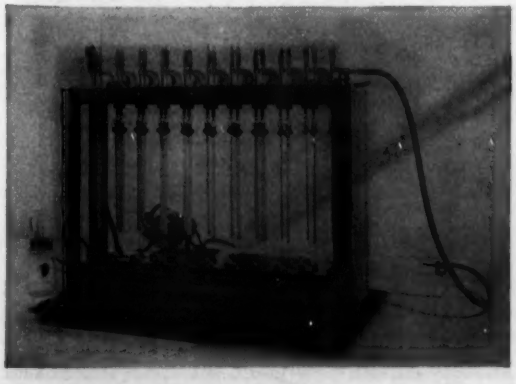

FIG. 1
The Multiple-Specimen Neenah Expansimeter and Auxiliary Equipment

[4] The Gaertner Scientific Corp., 1205 Wrightwood Ave., Chicago, Illinois, supplied the circular level and level vials, catalog numbers M492a (circular level) and M490a (level vial).

are cemented to the lower ends of the specimens very quickly and easily by having on hand a beaker of molten rosin-beeswax mixture; a specimen is laid upon cross-ruled paper, and the T of the link is dipped in the rosin-beeswax and applied to the end of the specimen, with care taken to see that the stem of the link is centered and parallel to the strip.

The length of specimen between the lines of clamping is nominally 10 inches, so that changes in length are simply multiplied by 10 to obtain directly the percentage change in length. For example, a change in length of 0.0562 inch is mentally multiplied by 10 to give a percentage change of 0.562%. Shorter lengths can, of course, be employed. It is only necessary to furnish longer links and make a correction for the change in length.

As shown in Fig. 2, the rod which supports the upper end of a specimen is pushed upward by means of a spring of stiffness more than sufficient to lift the heaviest anticipated load. The rod is square from its lower end up to the point where the spring bears against a pin through the rod. The upper part of the rod is round. The lower, square portion fits loosely in a square hole in a disk at the bottom of the barrel which houses the supporting mechanism; this simple device keeps the rod and specimen from rotating out of correct position.

The micrometers may be of any quality, but the inexpensive variety are sufficiently accurate for virtually all cases. Normally such micrometers can be obtained at a price of less than twenty dollars for the whole group of 20, and their accuracy is about 0.001 inch or 0.01% for a 10-inch length. Where small changes in length are measured the reliability may be better than this figure. Where unusually high accuracy is required, the micrometers should, in any case, be calibrated. As shown in Fig. 2, approximately one half of the yoke of each micrometer is cut off.

It is important that the hooks and eyes of the connecting links be equipped with sharp, straight, and smooth edges meeting cleanly in sharp notches, because rounded edges and rounded notches may result in error due to slip between the hook and eye induced by jarring of the apparatus. Even with well made hooks and eyes, the instrument should be vibrated in diminuendo style prior to a series of measurements. Such vibration is generally not observed to produce any change in the state of level of the vials, but is easily carried out by hand and

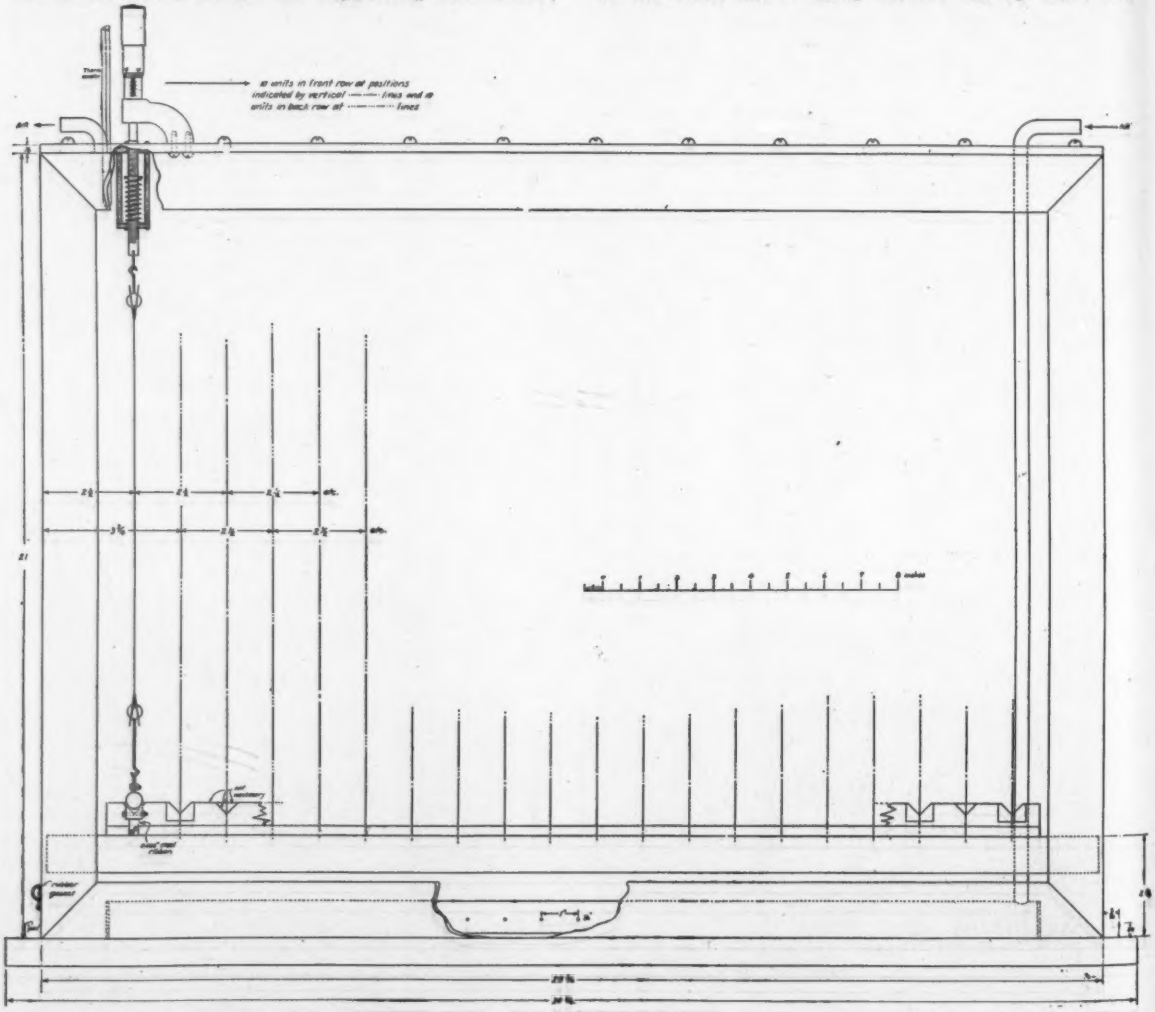

FIG. 2
Front View of the Neenah Expansimeter

guarantees the absence of any possible freakish contact between any hook and eye.

The recirculated conditioned air may be brought into the instrument by way of a distributing pipe arranged in the bottom of the apparatus, or the chamber may be made deeper and be equipped with fans and trays containing a saturated solution of a salt chosen to control the relative humidity at the desired value. Under the conditions described below the former method is much to be preferred, since it is more effective and is neater, faster, and simpler in use.

The commonly employed method of bubbling air through saturated salt solutions has been found to be rather unsatisfactory. Where the solution gives up moisture, the system frequently becomes clogged. More important, the rate of flow of air bubbled through bottles of reasonable size is low and, consequently, the circulation rate is not sufficient for the attainment of rapid equilibrium for those samples which normally equilibrate in a short time.

High Rate of Circulation Possible

The system shown in Fig. 4 is free of any tendency to become clogged, and the air is not bubbled through a solution, so that a high rate of circulation is possible. Air from the instrument case is returned to the centrifugal air pump (*P*) in order that any desired change in relative humidity will take place rapidly. Proper relative humidity is maintained by the device *H*, which contains a saturated salt solution. It will be noticed that the design of this device is such that strongly turbulent motion is imparted to the air in each cell, thus greatly reducing the film thickness between the moving air and the saturated salt solution; the turbulent motion also causes the air in each cell to become quite well mixed before passing on to the next cell. This arrangement is to be contrasted with a simple chamber in which the film thickness is great and through

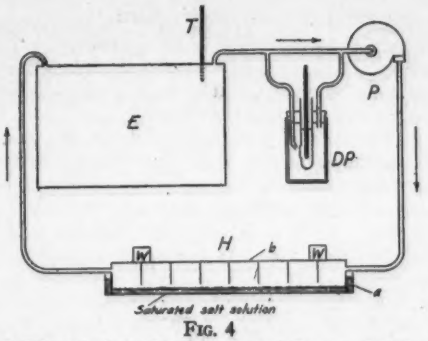

FIG. 4

Schematic Diagram of the Humidity Control System. *E*—The Instrument. *DP*—Dew-Point Apparatus. *H*—Humidifying Device. *P*—Centrifugal Air Pump. *T*—Thermometer. *W*—Weights.

which a substantial amount of air may pass without experiencing much change in relative humidity. The device *H* consists essentially of two metal trays: a simple tray (*a*) which contains the saturated salt solution, and an inverted tray (*b*) the interior of which is equipped with seven or more partitions forming at least eight cells. (An airtight fit between these partitions and the tray wall is not necessary.) The upper tray may be simply placed in or lifted out of the lower tray at will—there is no mechanical linkage between the two trays.

In pouring a volume of saturated salt solution into the lower tray, allowance must be made for the fact that the pressure in the cells is a few centimeters of water above atmospheric. Consequently, the level of the solution in the cells is lower than that assumed when the equipment is not in operation. The desired gap between the surface of the solution and the bottom of each partition is of the order of ¼ inch. The pressure will tend to lift the tray, and therefore weights (*W*) should be pro-

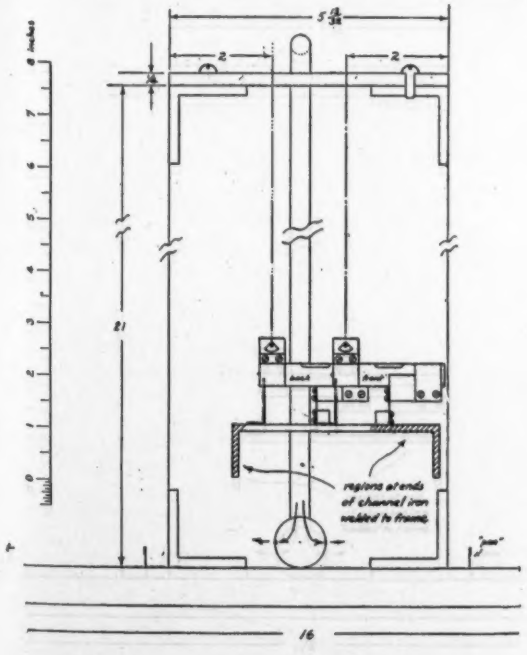

FIG. 3

Side View of the Neenah Expansimeter

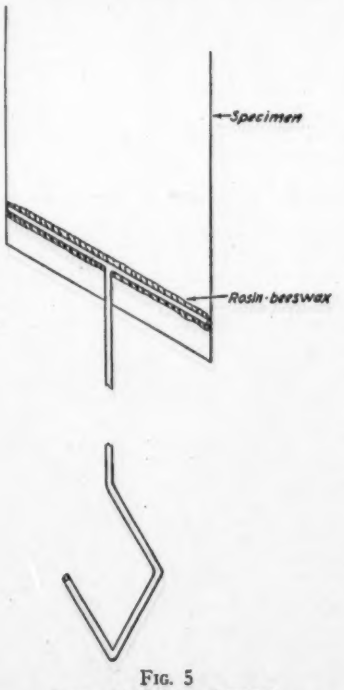

FIG. 5

Lower Link of Small Weight

vided in the event the tray happens not to be of sufficient weight to hold itself down.

The above described arrangement is not only effective in permitting rapid and complete change in relative humidity, but is easy to handle. When it is desired to change the relative humidity, the centrifugal air pump is turned off and the upper tray is lifted out and placed in a nearby rinsing tray containing plain water. Then one may either replace the tray containing the saturated salt solution with another tray containing the next desired solution, or simply change the solution. In routine work the former procedure is to be preferred. Where two or more trays are provided, trays not in use should be covered to prevent gain or loss of moisture.

Solutions which generally are called upon to extract moisture from the air should have an excess of salt, so that the crystals rise above the liquid surface.

The centrifugal air pump may be an inexpensive, small (hand) vacuum cleaner pump. It should preferably be of the type which is nearly airtight (*see* Fig. 1). The voltage applied to the motor should be considerably below normal, and should be obtained with either a variable transformer or a step-down transformer, because speed variations become too great for satisfactory operation when a rheostat or lamp bank is placed in series with the motor.

A moment's consideration will show that there will be no net flow of air in or out of the system if the system fails to be airtight in *only one place.* Then, at that place the pressure will quickly become that of the surrounding atmosphere, and pressures at other points of the system will assume values in accordance with the principles of hydrodynamics. It is, of course, convenient to make the instrument chamber the one place where the system is not essentially airtight. Observations with smoke show that the air is stagnant in the thermometer port in the top of the instrument, when this hole is opened by removing the thermometer. In fact, the principle involved is so effective that a low humidity equal to that which should be theoretically attained was accurately established when, for a period of several hours, the back glass plate was loosened and a large gap having a maximum opening of ¼ inch existed between the gasket and the plate.

Accurate Measure of Relative Humidity

The relative humidity in the instrument is accurately measured by means of a dew-point apparatus (*DP*) as shown in Fig. 4. A portion of the main air stream is passed through this apparatus, at a point close to the outlet. The dew-point temperature and the dry-bulb temperature in the instrument (measured by the thermometer *T*) enable one to obtain the relative humidity of the air as it leaves the instrument.

Accurate measurements of relative humidity have shown that this system is considerably more effective than the conventional chamber equipped with internal fans and trays placed in the bottom. According to experiences described in the literature, as well as experience at the Institute, the relative humidity in a chamber is usually quite different from that which the particular saturated salt solution in use is supposed to give, even when the relative humidity and temperature in the chamber have, after several days, apparently come to equilibrium. The defect is particularly bad when the desired relative humidity is very high or low, and it is often impossible to obtain a nearly saturated condition in a cabinet, even when the area of water exposed in the tray is as great as the base will permit. In the new system equilibration occurs rapidly and completely, even with all 20 paper specimens in place. Relative humidities actually obtained with a few saturated salt solutions are given in Table I. Included in this table are values obtained from the International Critical Tables.

Data for Judging Rate of Equilibration

Rate of equilibration for a large change in relative humidity and for approximately 440 square inches of freely exposed paper surface in the instrument may be judged from the following data. After many hours at 32% relative humidity, the saturated salt solution was changed to one for which the final, equilibrium humidity at 70 deg. F. is 85%. The time-relative humidity variation was: 9 minutes, 60%; 18 minutes, 73%; 30 minutes, 77%; 52 minutes, 80%; 100 minutes, 83.5%; 200 minutes, 85%.

TABLE I.—COMPARISON OF RELATIVE HUMIDITIES OBTAINED WITH A FEW SATURATED SALT SOLUTIONS AND TABULAR VALUES

Salt	Observed Relative Humidity at 21° C., %	Relative Humidity from I.C.T. at 20° C., %
LiCl	10–11	15*
LiCl	10–11	12
$CaCl_2$	32	32
$NaNO_3$	65	66
K_2CrO_4 (Source A)	85	88
K_2CrO_4 (Source B)	87	88
Pure water	100	(100)

* This value for LiCl appears to be definitely in error. The following value, 12%, is computed from data on partial pressure over an aqueous solution (I.C.T.), and is in agreement with a value obtained in an independent experiment.

One should be warned that the indication of attainment of the real equilibrium of a specimen with its surroundings is apt to be deceptive. While many papers equilibrate rapidly, it is a natural characteristic of certain papers to reach equilibrium very slowly. The time required for a given sample naturally depends upon the desired accuracy, for minute changes (less than 0.01%) may occur after even a day's exposure to rapidly circulated air of constant relative humidity. When the change in relative humidity is to or from a point in excess of about 75% relative humidity, a considerable period of time must usually be allowed; changes from a high moisture content to a lower value require a particularly long period. In making a determination of hygroexpansivity proper account for hysteresis must be taken.

In order that the saturated salt solution will properly control the relative humidity, the equipment should be used in a constant temperature room. Constancy of temperature will also guarantee that error due to expansion and contraction of the frame will be negligible, for a variation in room temperature of 1 deg. F. will produce an apparent change in length of a test specimen of approximately 0.0007%. Since the minimum change which can be read from the micrometers is 0.001%, and the usually desired accuracy is 0.01%, the temperature effect in a "constant temperature room" may be disregarded.

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Ethyl Alcohol from Sulphite Waste Liquor*

By Fred S. Hanson[1]

Abstract

The technological and economic aspects of the problem of manufacturing alcohol from sulphite waste liquor are reviewed. The only possible means of obtaining a large increase in ultimate yield of alcohol has been through modification of the cooking process to produce a waste liquor of high sugar content. Such procedures necessarily result in a pulp of low quality, but the practice is carried out to some extent in Europe at the present time. Changes in sulphite mill equipment are necessary for recovery of more than half of the waste liquor. The process has always been somewhat marginal even in Sweden, but the pressure of circumstances has resulted in extensive development in that country. War conditions have revived interest in the process in the U. S. It appears that operation would show a profit at present prices but would not be expected to continue as favorably after the war. The greatest advantage of the molasses or grain distillery is that the yield of alcohol is 6 to 10 times as great for the same equipment. The potential alcohol production of the U. S. sulphite industry is estimated to be 6% of the present total alcohol production, and to be capable of furnishing 3.5 to 4.5% of the planned production of synthetic rubber.

The manufacture of ethyl alcohol by fermentation of sulphite waste liquor has been primarily an economic problem since the Wallin *(1)* and Ekstrom *(2)* patents were granted in Sweden 35 years ago. There have been no radical changes in the nature of the process. The operation is a marginal one from an economic standpoint, and has not been a worthwhile investment in this country. Nor has it received development from a stream purification standpoint, because the nuisance is only modified, not eliminated.

In the present national situation there is considerable interest in whether sulphite alcohol has a place in the war effort. This interest has been stimulated particularly by the publicity given to the controversy between the alcohol and petroleum interests. Alcohol may be used as a starting material in the manufacture of synthetic rubber and as a motor fuel.

Technological View of the Sulphite Alcohol Process

The principle involved is yeast fermentation of the sugars in the waste liquor followed by distillation of the alcohol formed.

During the sulphite digestion most of the hemicelluloses or polysaccharides are removed from the wood *(3)* and appear in the waste liquor largely as simple sugars *(4)*. Removal is more complete with increased degree of cooking and at higher temperatures. The degree of hydrolysis increases with greater H ion concentration of the liquor and with increased temperature *(4)*. At the same time sugar decomposition takes place during the cook by oxidation to acids. The bisulphite ion takes part in this mechanism *(4)*, and the degree of decomposition is greater in liquors of high lime content. The sugar decomposition is also greater at higher temperatures. Bergson *(5)* obtained an optimum yield at a temperature of 133°C. With increased cooking time the sugar yield reaches a maximum and finally decreases *(6)*.

The only possible way to obtain a large increase in ultimate yield of alcohol from sulphite waste liquors has been through modification of the cooking process to produce waste liquor of high sugar content. But, at the same time, the more favorable conditions for sugar production are those which result in greater attack on the cellulose. The pulp strength and yield are consequently decreased. However, under the press of circumstances, such procedures are followed to some extent in Europe. The most practical procedure is to use a liquor of low lime content (about 0.7% combined SO_2) and cook until the maximum sugar yield is reached *(6)*. The pulp is used in low grades of paper, for rayon, and for cattle feed.

Hagglund has proposed the use of two-stage cooking, with low-lime content in both stages, to minimize sugar decomposition *(7)*. On the other hand Bergson *(5)* utilizes a system of returning side relief to subsequent cooks in order to subject the polysaccharides in the liquor to more complete hydrolysis and to build up the solids content of the waste liquor.

For economical operation it is obviously desirable to obtain as much of the waste liquor as possible, with as little dilution as possible, and without loss of production time. In Swedish practice the liquor is commonly drained from the digester. By draining the digester or blowpit no more than half the liquor is obtained. Washing in the digester with a limited amount of water may be carried out by diffusion from the top or bottom *(8)* or through use of the circulating system. Diffusion from the bottom gives the least dilution but diffusion is slower than circulation. Bergson *(5)* reports that 10 minutes circulation accomplishes perfect distribution of the dissolved solids in the system. This is not in agreement with the general experience that complete washing is impossible until the chips are defibered *(9)*. Bergson has devised a scheme of operation, in which the calculated recovery of solids is 95% based on the assumption of perfect mixing, and the dilution is only 1½ times.

The use of blowpits saves production time and is standard practice in this country. Passing unwashed pulp from the blowpit over a vacuum filter is one way of improving the recovery of dissolved solids without further dilution *(10)*. Modern chip-packing practice has increased the difficulty of recovering a high yield of sugars because there is less liquor in proportion to the amount of pulp *(9)*. In addition the higher concentration of lime in the liquor favors increased decomposition of sugars to acids.

The recovered waste liquor contains from 10 to 14% solids. Because the pH of sulphite liquors is below the most favorable range for yeast activity *(11)*, and because sulphur dioxide in the liquor is highly poisonous to yeast, special treatment is necessary before fermentation. The free SO_2 is removed by heating and aeration, and the liquor is neutralized. A treatment with sulphuric acid before neutralization

* Presented at the Fall Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Statler, Boston, Mass., Sept. 29-Oct. 1, 1942.

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has been proposed, in order to hydrolyze polysaccharides present in the liquor *(12)*, but the increase in alcohol does not pay for the acid *(13, 14)*. The neutralization is carried out in large towers and agitation is generally accomplished by a stream of air entering the bottom of the tower. A small amount of lime and minimizes turbidity *(13)*. The neutralization tralization is completed with $CaCO_3$. The use of $CaCO_3$ avoids the decomposition of sugars produced by local excesses of lime and minimizes turbidity *(13)*. The neutralization requires about 4 to 5 hours, and the subsequent settling requires about the same amount of time *(13)*. The settled liquor must be cooled to about 27°C., and the heat exchange may be used in preheating fermented liquor for distillation.

Fermentation is carried out in large open vats. Some means must be provided for supplying additional elements required for the support of the yeast. The nutrient may consist of ammonium salts and phosphates, or hydrolyzed skim milk *(15)*, or a yeast extract prepared by autodigestion of yeast at an elevated temperature. The yeast for fermentation is carried along from one batch to another by various methods *(13, 16)*, and is therefore adapted to its environment. Glucose and mannose, and to some extent galactose *(17, 38)*, are the only sugars in the waste liquor which are fermented by yeast. The fermentation requires four to five days. Yields of ethyl alcohol may range from 0.5 to 1.4% by volume. About 1% is obtained under favorable conditions *(13)*.

With modern continuous distillation equipment no great difficulty is involved in separation of the alcohol *(13)*. The product contains about 5% water and 3% methyl alcohol *(18)*. Refined sulphite alcohol is as pure as alcohol from any source.

There is a wide variation in different mills in the amount of alcohol recovered per ton of pulp produced. Table I gives some of the figures from recent literature. It may be seen that the average sulphite alcohol plant recovers only about 10 gallons per ton of pulp, while the theoretical maximum yield, based on the polysaccharides in the wood, is about 47 gallons.

A 100-ton sulphite mill yields about 80,000 gallons of recovered waste liquor per day. Because the neutralization and settling process may take at least eight hours, a minimum of 26,700 gallons capacity is required in the neutralizing tower with an intermediate storage of the same size. The fermentation requires at least four days, therefore a minimum of 320,000 gallons capacity is required in the vats or conveniently 12 vats of 26,700 gallons each. The still must obviously handle a minimum of 80,000 gallons per day.

TABLE I.—YIELD OF ETHYL ALCOHOL (95%) IN GALLONS PER TON OF AIR-DRY PULP

Strong Pulp	Easy-Bleaching Normal Strength	Viscose Pulp	Fodder Pulp	Conditions	Reference
43.3	47.2	...	...	Theoretical yield	5
...	48.1	...	...	Theoretical yield	9
40.4	43.0	...	...	Theoretical yield	19
8.8	...	17.7	...	Av. no. washing	9
...	10.8	...	...	Av. for Sweden	19
9.6	12.0	...	...	Av. for Germany	20
11.3	...	20.2	...	Av. good washing	9
16.9	19.6	...	...	Good operation	6
...	...	...	26.3	Best in Sweden 1939	6
...	...	21.5	...	2-stage cooking	21
...	27.8	...	32.8	2-stage (claim)	9
19.2	28.8	...	...	Bergson's system	5
...	...	39.6	42.0	Bergson max. result	5

The advantages of sulphite alcohol production from a technological standpoint are: (a) use of a strictly waste material, (b) some decrease in degree of stream pollution. The principal drawbacks in the operation are: (1) trouble for the sulphite mill in regulating operation for consistently high sugar yield and recovery, (2) adverse effect on pulp if high alcohol yield is wanted, (3) necessity for change of setup if a high proportion of the waste liquor is to be recovered, (4) necessity for special treatment of liquor before fermentation, (5) large volume of liquor to be handled, (6) small alcohol yield.

Economic History of Process in Sweden[2]

The process has always been somewhat marginal even in Sweden. But the lack of home produced motor fuel, the relatively large Swedish wood pulp industry, the pressure on the legislature to favor this industry, and above all, the pressure of wartime shortages, have conspired to increase production. The following paragraphs outline the development chronologically.

1907—The first experimental plants were built under the supervision of Wallin at Koppmanholmen, and of Ekstrom at Skutskar (*22*).

1908—The Koppmanholmen alcohol plant was closed down.

1909—The alcohol plant at Skutskar was expanded to include the entire production of the mill.

1910—The Ethyl Co. was organized as a promotional venture (*23*). Sulphite alcohol was reported to be made at a profit in Sweden (*24*).

1911—Two new plants were installed, the yearly production in three Swedish mills now amounting to 660,000 gallons (*25*). The excise rates had been adjusted, somewhat, to aid the new industry (*26*). The manufacturing cost was $0.18 to $0.19 per gallon, and the selling price $0.47 to $0.54 per gallon (*27*).

1912—Problem of use for motor fuel was not yet solved. Uses were limited, so development was not as rapid as had been expected (*28*). A car was built which would operate with alcohol. It was hoped to utilize alcohol in the manufacture of artificial rubber (*29*). 990,000 gallons were produced in 1912. Producers sold to alcohol trust at $0.30 per gallon. Production was limited by methods of distribution which made retail price high (*30*).

1913—A general introduction of sulphite alcohol manufacture was difficult because of lack of sufficiently favorable legislation (*31*).

1914—Alcohol was still too expensive for motors (*32*).

1916—The Swedish Board of Trade proposed to the government that the manufacture of sulphite alcohol for motor fuel should be encouraged by removal of all restrictions (*34*). A protective import duty of $0.17 per gallon was imposed on gasoline (*35*). The average cost of producing 100% alcohol for all the mills was $0.227 per gallon, or $0.25 after denaturation. However, alcohol could not compete with gasoline unless the gasoline price was raised to $0.326 per gallon. This would mean an increase of 7% in operating cost of automobiles.

1917—The Swedish Pulp Manufacturer's Association expressed the opinion that if the sulphite industry was to venture money in erecting alcohol plants it was necessary for the state to guarantee a market and a price which would secure depreciation and interest on the plant (*36*). At that time an interruption in development had occurred. Selling difficulties offered the most serious obstacles (*22*).

1921—There were now 21 sulphite alcohol plants in Sweden (*39*).

1922—45,00 gallons of sulphite alcohol used in motor fuel in 1922 (*40*).

1930—18 mills were producing alcohol (*41*) and four plants were shut down (*40*). Sales were equal to 68% of the total production capacity. Of 3½ million gallons total production, 1,200,000 gallons were used for industrial purposes, 2 million gallons for automobiles, and 300,000 gallons in alcoholic beverages.

1933—In general the results of sulphite alcohol production have been scarcely economic (*43*). Only the use of alcohol in mixtures with gasoline has made the construction of this industry possible. Sulphite alcohol factories during the previous 10 years have kept themselves alive only by continually improving their plants. Expansion of factories during this period had been bitterly fought, and was now scarcely advisable, especially since a tax for alcohol, as high as for gasoline, was being considered in 1933 (*43*).

1939—Sulphite alcohol expansion was considered the most promising solution in case imports of gasoline should be completely shut off (*44*). Possibilities of increasing yield were reviewed in a proposal of the Engineers' Academy to the government (*45*). Emphasis was placed on the need for immediate trials and large scale experiments on recently proposed methods. The demand for increased yield was contrary to the quality which was desired in most Swedish mills (*21*).

1940—Circumstances have restored sulphite alcohol to the important position it held in the first world war. The Swedish government was offering bonuses for the fulfillment of definite production programs and was furnishing the capital to carry them out. Production was at a rate of 9½ million gallons (*16*). The alcohol industry was expected to remain strong after the present war. The export trade was lost anyhow so some mills were resorting to cooking fodder pulp to increase alcohol yield (*5, 6, 43*).

1941—Sulphite alcohol was considered as a raw material for an organic chemical industry (*46*). The economic factors involved offer difficulties. Sulphite alcohol costs more in most cases than alcohol from molasses and corn, and would have to compete when the world markets are again open. The planned output of 18½ million gallons of alcohol for 1941 had not been reached in spite of greatly increased capacity. The main reason was that only mills making rayon and fodder pulps give a high yield of alcohol per ton of pulp. The small demand at present for Swedish strong sulphite is causing many plants to change to fodder pulp (*47*).

In Norway, and to a certain extent in Finland, the sulphite alcohol development has been parallel to that

[2] Acknowledgment is made of valuable aid received from the bibliography of Johsen and Hovey for the period up to 1918.

of Sweden. This is likewise true of Germany and other European countries, but to a lesser extent and with modifications. Early development in Germany was retarded by the heavy excise taxes *(48, 49)*. The necessity of World War I produced the German sulphite alcohol industry to supply fuel for military purposes. The industry was retained because of increasing consumption of motor fuel, and also to combat to a certain extent price fixing of imported motor fuel by foreign monopolies *(20)*. In 1938 1½ million gallons of sulphite alcohol were produced in Germany *(50)*. This was one fourth of the quality needed as motor fuel. The production is being further increased.

Economic History of Process in U. S.

Alcohol in the United States in recent years has been made mostly (80%) from blackstrap molasses, with grain and synthetic alcohols making up the balance.

A full-scale sulphite alcohol plant, using the Ekstrom process, was built at the Mechanicsville, N. Y. mill of the West Virginia Pulp and Paper Company in 1913. Production (500 gallons per day was started in March, 1914. The plant was thoroughly modern and complete *(51)*, and neither money nor talent were spared in the development *(52)*.

A variation of the standard process was worked out by Marchand for the Crown Willamette Paper Company in 1914. A small pilot plant using this process was set up in their mill at Oregon City, Oregon, in 1915. Transfer of cost figures to the basis of a large scale operation was found to be difficult, but the process appeared to be an economic possibility *(53)*. An experimental plant using the Marchand process was constructed by the Kimberly-Clark Corporation at Kimberly, Wisconsin in 1916. From the results of a year's operation and the expenditure of $30,000 it was concluded that the process would about break even on a commercial scale with little return to be hoped for on the investment.

There was considerable interest in sulphite alcohol in this country at the time of our participation in World War I. The War Industries Board anticipated a shortage of ethyl alcohol, the Shipping Board was interested in releasing tonnage used for shipment of blackstrap molasses and the Food Administration was interested in the conservation of grain *(51)*.

The West Virginia Pulp and Paper Company's alcohol plant did not prove to be a profitable undertaking, considering all the costs *(54)*. It was eventually shut down apparently soon after the close of the war.

The McKee process *(55)* was tried out in an experimental plant at the Hammermill Paper Company, Erie, Pennsylvania, about 1920. Commercial production did not follow.

Other work may have been done in this country but the information has not been published.

Present and Future Status of Sulphite Alcohol in U. S.

The present war has brought alcohol into the headlines in connection with synthetic rubber.

Farm interests in the central west proposed the construction of new alcohol plants located in the grain-growing areas. The reply of the War Production Board stated that it was desirable to use existing facilities for expanding alcohol production, and that with conversion of whiskey distilleries the production of alcohol appeared to be adequate. Alcohol was not originally included in the government plans for synthetic rubber production. Evidence presented in the Gillette subcommittee investigation showed that plants making butadiene for synthetic rubber could be put into production much more quickly, and with the requirement of much less critical material, than plants using petroleum as the source. Also more production experience is available for the alcohol process. The cost would be higher, but this is secondary in the rubber emergency *(56)*. The Gillette bill involved the setting up of an independent agency to produce synthetic rubber for military and civilian needs from farm and forest products. This was vetoed by President Roosevelt. Plans of the War Production Board were changed to include 200,000 tons of rubber from alcohol out of a total production of 800,000 tons.

The War Production Board report on alcohol production for the next year *(58)* provides for the following amounts from various sources:

Source	Millions of Gallons
Synthetic Plants	65
Whiskey Plants Already Converted	120
Whiskey Plants To Be Converted	120
New Orleans Distilleries	65
Atlantic Seaboard Distilleries	160
Cuba and Mexico	10
Carryover From 1942	50
	590

Demands are estimated at 476 million gallons including 200 million for butadiene manufacture. A large volume of grain will be used because of difficulties of shipping molasses.

Sulphite waste liquor has been proposed as a desirable war time source of alcohol. It is considered the most feasible source of this material for war industries in the Pacific northwest *(59)*. In a letter to Senator McNary of Oregon during the preparation of the Gillette bill, McCarthy *(60)* proposed that alcohol from sulphite waste liquor be made the basis of synthetic rubber production in connection with the Bonneville power project. Pulp producers of the Pacific area were interested in the production of ethanol, if they could obtain contracts at a price which would amortize plant outlay in the next two or three years. Faced with the possibility of a shutdown of many Canadian pulp and paper mills to provide labor for war industries, the Ontario Paper Company at Thorold, Ontario, has applied for priorities on distillation equipment for making alcohol for war time needs *(61)*. This company already maintains a fermentation plant for producing yeast from sulphite waste liquor *(62)*.

It is obviously not possible to give a single figure for the cost of producing sulphite alcohol which will fit all cases. The Puget Sound Pulp and Timber Company estimates a cost of $0.18 to $0.20 per gallon. Puget Sound's Anacortes mill is a 240-ton mill. Costs for smaller mills are relatively higher. Hagglund's estimate for a well-operated 100-ton mill under Swedish conditions in 1918 was $0.112 per gallon. This was converted by Johnsen *(33)* to American conditions by assuming a 50% increase in salaries, labor, repairs and initial plant cost and allowing 15% depreciation—the result, $0.183 per gallon. However, the actual average production cost for all the Swedish mills in 1916 was twice as high, namely, $0.227 per gallon *(35)*. If this is converted in the same way it becomes $0.371 per gallon. If some universal figure must be settled upon, let it be the aver-

age of the two extremes ($0.18 and $0.37) which is $0.277 per gallon.

Normally blackstrap molasses is a large, cheap source of alcohol in this country. On January 1, 1941 the cost of blackstrap was $0.065 per gallon f.o.b. gulf ports *(63)*. One gallon of ordinary molasses makes about 0.4 gallons of alcohol and the complete conversion cost is about $0.08 per gallon *(64)*. This adds up to a total cost of $0.236 per gallon, while the selling price (cheapest denatured grade, SD2B) was $0.285 per gallon in tanks at the works. The biggest advantage of the molasses or grain distillery over the sulphite distillery is that its yield of alcohol is 6 to 10 times as great for the same equipment. It goes without saying that this is a serious handicap in competitive business. At the present time the cost of blackstrap molasses has risen to $0.17 per gallon *(65)*. On the same basis as before this makes the cost $0.505 per gallon, while the cheapest denatured grade is now selling for $0.50 per gallon. Corn is now selling (Sept. 5, 1942) for $0.83125 per bushel on the Chicago market. The yield of alcohol from corn is about 2.7 gallons per bushel *(64)*. If an additional cost of $0.05 is assumed for the starch conversion operation, then the manufacturing cost of grain alcohol is now $0.435 per gallon.

It appears from these figures that the manufacture of sulphite alcohol would show a profit at present wartime prices. In order for individual mills to make such an investment the profit would have to continue after the war. It is not at all apparent that this would be the case. There is also the possibility of government subsidy in order to provide an additional source of alcohol during the present emergency. The following calculation is made to show the potential production from this source. From the present U. S. sulphite pulp production of nearly 3 million tons, and the average yield of 10 gallons per ton for Swedish mills making normal strength pulp, the alcohol production would amount to 30 million gallons of 95% alcohol for the entire industry. This would amount to 6% of the total planned production of 500 million gallons for the coming year. The equivalent in Buna S rubber *(56)* is 36,000 tons. This figure would amount to 4.5 to 3.6% of the planned total of 800,000 to 1,000,000 tons.

For a broad view of the future, a greatly enlarged alcohol industry, maintained in part for synthetic rubber production, and in part for conservation of petroleum resources, may bring about a place for sulphite alcohol in the national economy.

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Chemical Engineers Manual

John Wiley & Sons have just published a Chemical Engineers Manual by D. B. Keyes and A. Garrell Deem of the University of Illinois, a book of 220 pages (4½ x 6½") containing the equations and tables in constant use by the profession.

The first section contains equations in fluid flow, heat transfer, diffusional operations (absorption, humidification, drying and distilling), filtrations and settling.

The second section is devoted to tables of logarithms, integrals, steam, specific heat, thermal conductivity, viscosity, vapor pressure, critical constants, safe loads and conversions factors.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York, N. Y., at $2.50 per copy.

Issues New Technical Dictionary

A new technical and commercial Spanish-English and English-Spanish Dictionary has recently been published by The Chemical Publishing Company, 234 King street, Brooklyn, N. Y., at $10 a copy.

This book is a useful reference work, with over 45,000 words, each of which has been carefully translated in accordance with the plan of the Royal Spanish Academy of Languages.

All modern words referring to mechanics, engineering, aircraft, shipbuilding, marine and naval terms, industrial chemistry, etc., are included. Conversion tables of weights and measures and moneys are given. The work is, therefore, of particular value to business executives engaged in Latin American trade.

Amend Definition for Paper Cups

WASHINGTON, D. C., December 9, 1942—Specifically identifying the paper cups and containers covered by Maximum Price Regulation No. 129, OPA has issued an amendment enlarging and clarifying the definition for this group of paper products and bringing conically shaped milk bottles under the regulation.

Included in the amendment (Part 1347) are the following: waxed paper, envelopes, sanitary closures and milk bottle caps, drinking straws, certain sulphate, and certain sulphite papers, certain tissue paper, rope and jute papers, technical papers, gummed papers, tags, pin tickets and marking machine tickets, glazed and fancy papers, resale book matches, and unprinted single weight crepe paper in folds.

Paper cups, paper containers and liquid tight containers subject to the regulation now are defined as: "Round, open-end, nested food and drinking cups, spirally wound liquid tight containers made of chemical and/or mechanical pulp, and conically shaped milk bottles."

Previously, the paragraph had used this general phrase: "includes all types of cups and containers, except those referred to as paper milk bottles."

The earlier exception of paper milk bottles was intended to apply to rectangular shaped paper milk bottles. This type was later brought under Maximum Price Regulation No. 187 (Certain Paperboard Products). The manufacturers of conically shaped bottles, representing 100 percent of the industry, signed a voluntary agreement some months ago reverting to prices prevailing during the base period in Reg. 129.

N. E. Paper Men Buy War Bonds

BOSTON, Mass., December 7, 1942—The purchase of two War Bonds, a total value of $1000, was voted at a luncheon meeting of the New England Paper Merchants Association, held Thursday at the Hotel Touraine. This purchase brings the Association's investment in War Bonds to $2000.

Forty-nine members were present and in the absence of the president and the two vice-presidents, Treasurer Frank B. Cummings presided.

Floyd H. Blackman, who has represented the paper merchants of New England on a national committee to cooperate with the Office of Price Administration in working out ceilings for the Wrapping Paper Division, outlined the work he has been doing, mentioning two trips to New York and Chicago relative to the matter.

Harry Londergan, statistician of the National Paper Trade Association, explained the various War Production Board and Office of Price Administration regulations now in effect, discussing also some of the plans for new regulations which he believes will be issued in the near future.

Wood Pulp Advisory Committee Meets

WASHINGTON, D. C., December 9, 1942—Pulp and Paper Industry Woodpulp Allocation Advisory Committee which advises WPB in its allocation of woodpulp, at a recent meeting here in executive session discussed a new report form to ascertain the fibre requirements for making various types of paper and paperboard. It is said this information is needed by WPB Pulp and Paper Division to assist its distribution of the supply of woodpulp, which promises to become increasingly short during 1943.

Chlorine Restrictions Revised

WASHINGTON, D. C., December 9, 1942—Restrictions on the use of chlorine and products containing available chlorine have been revised to remove all products containing available chlorine such as liquid sodium hypochlorite, calcium hypochlorite, sodium chlorite and other similar products. The revision is contained in WPB Conservation Order M-19.

Also exempted from the order, as amended, are deliveries and use of 2,000 tons of chlorine or less per month. The new form is a straight allocation order replacing the previous conservation and allocation order. Control over the whole chlorine family will be exercised by controlling original shipments of chlorine.

Change from end-use restriction to complete allocation control is made necessary because the restrictions on consumption were too rigid when chlorine was in easy supply and not tight enough when chlorine was scarcer. Under allocation control, instantaneous adjustments can be made in distribution and use control as the supply situation changes.

No person may deliver, accept delivery, or use chlorine except by specific authorization by WPB. Exempt from these restrictions are users of 2,000 pounds or less per month, and delivery and use of chlorine for water purification and sewage treatment, so long as inventories are not more than 30 days' supply.

Under the amended order purchasers must place their orders with distributors by the fifth of each month, and with producers by the tenth of each month.

Reliance Honors Steady Workers

Over 150 men and women workers at The Reliance Electric and Engineering Company, Cleveland, Ohio, have not missed a single working day from their jobs for the twelve months since Pearl Harbor, according to a report made to company executives by the Labor Management Committee. These men and women were honored Monday at special dinners tendered them by the management.

This attendance record represents better than 15 per cent of the total number of employees at work in the two plants of the company which were in operation at this time a year ago. Subsequently, several hundred new employees have been added who could not, of course, be included in the compilation of the attendance record.

Company executives addressed the three dinners which because of round-the-clock operations were held at noon on Monday, in the early evening, and again at four o'clock Tuesday morning.

Louis Fischer Dead

Louis Fischer, a native of Hungary who was in the paper distributing business in Memphis, Tenn., for nearly 60 years, died recently at the age of 77.

Mr. Fischer came to this country and to Memphis when about 17 and was employed by the Memphis Paper Company until he started his own business in partnership with L. Crenshaw nearly 30 years ago.

He was active in the firm of Crenshaw & Fischer until he became ill a few weeks ago. He was an American citizen, a member of B'nai B'rith and Baron Hirch Synagogue.

He leaves his wife, the former Hanna Rosenberg, also a native of Hungary.

HydroLectric Hand Lift Trucks

Lift Trucks, Inc., of Cincinnati, Ohio, created and manufacture the HydroLectric, the motorized hand lift truck having rear wheel drive and automotive gear transmission with excess motor and battery power. Years ago, eight hours' operation a day for electric trucks was considered a fair test, and it was on that basis the first HydroLectrics were tried out. But, performances far exceeded expectations. Actually in a fourteen-day test at a large machine tool plant, the HydroLectric handled average loads of 5000 pounds continuously from twenty to twenty-four hours instead of but eight hours of 3000 lb. loads as originally hoped for.

These original HydroLectric trucks are still in operation with records of 12 years on the basis of 8-hour day service. HydroLectrics are manufactured only at Cincinnati, Ohio, by the same Stuebings who created hand lift trucks in 1910.

According to W. C. Stuebing, president of Lift Trucks, Inc., HydroLectrics are performing far better than the claims made for them. Mr. Stuebing attributes this unusual performance to correct design, sturdy construction, and above all, thirty years' experience in lift truck engineering and manufacturing.

Mr. Stuebing claims any inexperienced man can operate the HydroLectric. Maximum loads are easily lifted through a powerful hydraulic ram. Then, by pressing the patented finger control, heavy loads are moved forward or backward without effort.

Advantages of the HydroLectric are: Powerful motor—large battery—rear load wheel drive to insure positive traction—four wheel construction for safety and stability—balanced handle—finger tip control—it costs only 9 cents per day for power—weighs only ⅓ and costs only ⅓ of other power trucks of equal load capacity.

New Literature

Chromium protection is the title of a booklet issued by the Chromium Corporation of America, 120 Broadway, New York. It presents much information of the concern's "Cordon" plating. The many merits of chromium plating, such as corrosion-resisting, hardness, smoothness, temperature effects, adaptability, etc. are given. A wide list of industrial applications includes paper and pulp manufacturing equipment.

Sixteen ways to add life to your felts, is the subject of a booklet issued by The Orr Felt and Blanket Company, Piqua, Ohio. It presents practical suggestions for prolonging the life of felts, through proper maintenance and correct adjustment of equipment. Recent felt improvements are also briefly discussed.

Metallurgy substitutes for critical materials, are discussed in a bulletin issued by the Bound Brook Oil-Less Bearing Company, Bound Brook, N. J. It explains the merits of "Powdiron," as a substitute for restricted materials. The company states this product is a porous iron bearing alloy, containing no tin and only 5% copper. It is supplied with or without lubricant impregnation, as an alternate material for copper-tin bronze, in parts and bearings, and for ball, roller and needle bearings, under the war conservation program.

The autumn issue of The Years of Paper, published by the Crown Zellerbach Corp., San Francisco, Cal., is a war activity edition. It tells the story of "Crown Zellerbach folks taking their place in war." An honor roll of employees in the armed forces, with photographs, is a special feature and makes this a particularly interesting issue.

Indoor oil circuit breakers, Classes 150-TOR-3, and 250-TOR-3, are discussed in Catalogue 3350, issued by the Roller-Smith Co., Bethlehem, Pa. It describes 15,000 volt oil circuit breakers, for indoor service, of the oil-tight, single, round tank type, single throw, which are available in 2 and 3 pole designs. Various sizes of breakers, with interrupting ratings, control diagrams and dimensional data are included.

Opposed impeller pumps are described in Catalogue B-3, issued by the De Laval Steam Turbine Company, Trenton, N. J. In this type of De Laval pump, both impellers are of the single-suction type, the suction openings facing outwardly to balance the axial thrust. Listed capacities from 50 gallons to 1,500 gallons per minute are given, and for heads from 80 to 800 feet.

A history of America's oldest iron and steel producer, 1742-1942, has been issued by the Taylor-Wharton Iron and Steel Company, High Bridge, N. J. This booklet recounts the interesting story of the 200th anniversary of the manufacture of iron at the Union Iron Works. This plant furnished cannon balls for George Washington's army in the War of the Revolution. The history of the succeeding concerns is brought up to date in the present Taylor-Wharton Iron and Steel Company, manufacturers of manganese steel products.

Steel Jacketed Press Rolls

Advantages of its recently announced steel jacketed Vulcalock press rolls as compared with the older type construction is described in detail in a catalog section on the subject just issued by The B. F. Goodrich Company. Copies are now available upon request to the company's principal offices in Akron, Ohio. Formal announcement of the new roll was made several months ago after a long period of testing in some of the country's leading paper mills.

The catalog section, well illustrated, describes the various steps in the construction of the new type roll in non-technical language.

The new roll has been of particular interest since the recent War Production Board limitation on rubber covers for paper mill rolls. Among the many advantages cited by the company when it announced the new product was an average saving of about 25 per cent in the rubber needed to cover the press roll.

Calcium Determination

A convenient, rapid and accurate method of calcium determination for routine plant control has been developed by W. H. and L. D. Betz, chemical engineers and consultants. This new method, which is simpler and quicker than the conventional gravimetric calcium analysis, is the result of two years of research by Betz Laboratories. Details are given fully in the Betz Technical Paper No. 81, entitled "Determination of Calcium in the Presence of Magnesium by Standard Soap Solution." Complimentary copies will be furnished on request by W. H. and L. D. Betz, Frankford, Philadelphia, Pennsylvania.

IMPORTS OF PAPER

NEW YORK IMPORTS

WEEK ENDING DECEMBER 5, 1942

SUMMARY

Filter Paper ..... 4 cs.
Tracing Cloth ..... 41 cs.
Decalcomania ..... 20 cs.
Ceramic paper ..... 2 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., ——, ——, 4 cs.

TRACING CLOTH

Keuffel & Esser Co., ——, ——, 41 cs.

DECALCOMANIA

B. F. Drakenfeld & Co., ——, ——, 20 cs., (duplex).

CERAMIC PAPER

B. F. Drakenfeld & Co., ——, ——, 2 cs.

CHINA CLAY

——, ——, ——, 20 casks.

To Sell Hudson Falls Equipment

The Osborne Paper Mill Equipment Corporation has purchased all of the paper equipment from the Union Bag and Paper Corporation at Hudson Falls. This equipment is offered for immediate sale and shipment. The machinery, among other equipment, includes:—Two 156-inch Fourdrinier machines complete with drives, screens, beaters and other auxiliaries; one 112-inch Fourdrinier machine complete with suction couch, suction press, screens, beaters, drives and auxiliaries; one 68-inch Fourdrinier with 19 dryers, drives, jordans, beaters, pumps, etc.

Many of the foregoing items will be split to suit the needs of the purchasers, or machines complete with auxiliary equipment of separate items will be sold. All of this equipment must be sold and shipped within three months.

Mail inquiries should be addressed to the Osborne Paper Mill Equipment Corporation at Hudson Falls, N. Y., as this company will have authorized representatives at the mill to handle such inquiries.

Paper Demand Heavy in Philadelphia

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., December 7, 1942—In view of the conflicting cross currents believed to exist in the prevailing ceiling prices, consumers in this area are placing an unprecedented amount of orders, specifying delivery before January 1st, 1943. The Philadelphia market is experiencing one of the most active December's in several years, and it is thought that the delivery condition is specified because of mounting taxes that will be imposed on that date. Distributors of fine papers and specialties report an unprecedented demand for these items, and state that buying has reached the broadest proportion in several years.

Greater improvement is reported in the demand for higher grades of waste paper; however, prices on the lower grades, which go into cardboard, etc., are almost demoralized, because of the fact that the mills which are using these materials, are only running on a 3 to 4-day weekly schedule, and consequently are not absorbing these grades.

Indianapolis Demand Active

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., December 7, 1942—Paper demand in this area continued fairly active during the last week with supplies generally adequate, even though production at mills was reported below that of a year ago. As the local trade nears the end of the year, it is found that inventories are in rather better shape than was expected in view of the heavy demand during the late fall and early winter. However, inventories at the end of the year will be considerably lower than a year ago, with some items, of course, entirely off the market.

Newsprint demand continued good last week with indications pointing to good demand until after the year-end sales. Lineage is better than was expected in view of the losses sustained by such large advertisers as appliance, automobile and tire manufacturers. Better retail demand has caused an increase in lineage from domestic sources, but this increase hardly is sufficient to offset the other losses.

Wrapping paper and bag demand was extremely active due to the approach of the holiday season. Large scale publicity here concerning the shortage of these items caused retail merchants to adopt drastic measures for a time toward conservation. Now they are loosening up somewhat.

Tissues moved well last week. Box demand was good, much of it due to holiday trade, but holiday boxes are much scarcer than last year and last week many of the smaller stores followed the lead of their big brothers in discontinuing the use of holiday wrapping paper entirely.

Even though temperatures last week went down near the zero mark, there was reported a trifle better demand for roofing and building paper. Some of this was for future delivery as the retailers are beginning to think of next spring and the fact that perhaps they will be unable to get these supplies at that time.

A fair demand was reported last week for better grades of rags with mill prices bumping along the ceiling. Roofing rags also were in demand. Prices on better grades of waste paper also were firmer and demand was a trifle better. Other grades showed no change.

Association Plans Christmas Party

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., December 7, 1942—The annual Christmas Party of the Philadelphia Paper and Cordage Association will be held at the Arcadia, Chestnut near Juniper street, on Tuesday, December 15 at 12:30 o'clock.

This is an outstanding occasion of that association, and is looked forward to eagerly by the grownups as well as the 60 underprivileged children from the Salvation Army Settlement House, who are the guests of the members of the Association. There will be the usual turkey dinner and all the fixin's, with sweaters, shoes, skates, dolls, games and innumerable other toys for the children, a huge Christmas tree, with Leonard Fitzgerald, the perennial Santa, to do the honors. The entertainment will consist of Christmas carols, a vaudeville act, clowns and an animal act.

New York Paper and Pulp Market Review

Sales of Paper Widely Reported at Relatively High Level as Output Continues to Decline—Pulp Market Rather Quiet—Higher Grades Of Waster Paper More Active—Demand for Roofing Rags Strong.

Office of the PAPER TRADE JOURNAL.
Wednesday, December 9, 1942.

Although the production of paper is declining demand for many grades is reported very active. Current sales are heavy and are comparable with some of the best years, according to some of the reports received from many manufacturers' representatives, jobbers, and general paper merchants during the current week.

Trade reports at this date also indicate that sales of paper items for the holidays are at a good level.

The index of general business activity for the week ended November 28, rose to 136.7%, from 134.3% for the preceding week, compared with 135.0% for the corresponding week last year. Paper board production was 9.2% higher.

Paper production for the week ended November 28 was estimated at 83.5%, compared with 107.7% for 1941, with 84.4% for 1940, with 95.1% for 1939, and with 78.8% for the corresponding week for 1938.

Paper board production for the week ended November 28 was 77.0% compared with 101.0% for 1941, with 76.0% for 1940, with 78.0% for 1939, and with 61.0% for the corresponding week for 1938.

The need for manpower diversion to war plants is expected to sharply curtail the future output of paper and paper board. A. G. Wakeman, Director, Pulp and Paper Division, War Production Board, recently emphasized that less paper will be available in the future, because of need for more labor in war industries and through transportation shortages.

Wood Pulp

Demand for bleached sulphite pulp is active. Other grades are slow. No important change has been reported during the current week.

Rags

Mill buying of new cotton cuttings is reported at a fair level of activity at this date. Prices remain unchanged.

Demand continues steady on the roofing grades. Most sales are reported to be at ceiling prices. Other grades of old rags are only fairly active, despite the reported limited supply situation.

Old Rope and Bagging

No important change in prices or demand has been reported this week in the old rope market.

Mill buying of scrap bagging continues on a limited scale.

Old Waste Paper

More activity is reported in the higher grades of old waste paper this week. All current prices are, in some grades, as much as 50% below ceiling prices.

Opened bids for the waste paper of the Supply Department, U. S. Post Office, New York, indicated a high bid of .18 per cwt. for accumulations during the period from January 1 to March 31, 1943.

Twine

No important change in prices or the general market situation in twine has been reported this week. The high bid opened for the supply of waste twine of the U. S. Post Office, New York, for the Period, January 1 to March 31, 1943, was $2.75 per cwt.

Study Magazine Paper Curtailment

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 9, 1942—Possible methods to curtail magazine paper usage were discussed recently by the Magazine and Periodical Industry Advisory Committee and representatives of WPB here.

One method discussed was a straight reduction applying to all users in the trade. Another was to reduce paper basis weights to a minimum. Members also considered suggestions on what base period should be chosen in making any curtailment.

A sub-committee has been selected to make a further study and to submit recommendations. The sub-committee consists of Mason Britton of the McGraw & Hill Publishing Company; A. L. Grammer, Street & Smith Publications; Lewis W. Trayser, Curtis Publishing Company; and N. L. Wallace, Time, Incorporated.

A. G. Wakeman, director of the Pulp and Paper Division of WPB, stressed the fact that there will be less paper available in the future, because of increasing war demands and because of manpower and transportation shortages. Edward R. Gay of the Office of Civilian Supply, discussed the role of his agency in any paper usage reduction program. W. J. Risley, Jr., was Government Presiding Officer.

In addition to the four sub-committee members, other members of the Advisory Committee present were Glen D. Boylan, representing Meredith Publishing Company; Clayton H. Ernst, Outdoors Publication Company; D. C. Hudson, Progressive Farmer-Ruralist Company; Marvin Pierce, McCall Corporation; Dr. Daniel A. Poling, Christian Herald; and H. E. Radcliffe, Nature Magazine.

Correction in Newsprint Prices

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 9, 1942—Correcting a clerical error in the revision of newsprint price regulation, OPA on Monday set a 10 per cent (not 16 per cent) maximum markup which paper merchants selling to other merchants may charge on sales from 5,000 to 10,000 pounds of white standard newsprint paper in rolls.

The change is contained in a correction to Revised Maximum Price Regulation No. 130—Standard Newsprint Paper—and is retroactive to November 16, the effective date of the Revised Regulation. Merchants particularly should note this correction is in their copies of the Regulation.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL.
Wednesday, December 9, 1942.

BLANC FIXE—Prices on blanc fixe are firm and unchanged and conform to prevailing market levels. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton, f.o.b., works. Demand reported good for the week.

BLEACHING POWDER — Quotations on bleaching powder are firm. Demand reported active for the week. Bleaching powder is currently quoted at $2.25 per 100 pounds, in drums, at works.

CASEIN—Prices on casein are unchanged for the current week. Standard domestic casein, 20-30 mesh, is currently quoted at 19 cents per pound; 80-100 mesh, at 19½ cents per pound. All prices in bags, car lots. Argentina casein, 20-30 mesh, at 7 cents per pound, c.i.f., is nominal. No quotations on French casein.

CAUSTIC SODA—Quotations on caustic soda continue unchanged at prevailing market prices. Demand reported fair. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds in drums, car lots, at works.

CHINA CLAY—Prices on china clay are firm and conform to prevailing market levels. Demand reported moderate at this date. Domestic filter clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is currently offered at from $13 to $25 per ton, ship side.

CHLORINE—Quotations on chlorine are firm and unchanged. Market strong. Government demand is reported heavy during the current week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN — The rosin market is reported firm for the week with lower prices on some grades. "G" gum rosin is currently quoted at $3.41 per 100 pounds, in barrels. Savannah "F" wood rosin is currently quoted at $3.40 per 100 pounds, in barrels. New York. Seventy per cent gum rosin size is quoted at $3.63 per 100 pounds f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand moderate for the current week. Domestic salt cake is currently quoted at $15 per ton, in bulk; chrome salt cake at $16 per ton. Restrictions on chrome cake removed. All prices in car lots, f.o.b., shipping point. The quotation of $16 per ton on imported salt cake is nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market levels. Demand reported good for the week. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH — Prices on corn starch are reported unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds. All prices in bags, carlots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported light for the current week. The commercial grades are currently quoted at from $1.15 to $1.25; iron free at from $1.75 to $1.85 per 100 pounds. All prices in bags, carlots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and conform to prevailing market levels. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby carlots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mines. No quotations on imported talc.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	$5.00	@	—
No. 1 Wrapping	4.75	"	—
Standard Wrapping	4.50	"	—
Standard Bag	4.125	"	—
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.05	"	—
White No. 1½	1.00	"	—
White No. 2	1.00	"	—
Anti-Tarnish M. G.	.95	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case			
Unbleached, Jr.	2.35	"	—
Bleached, Jr.	2.65	"	—
Manila—per cwt.—C. l. l. a			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	*48.00	@	—
Chip	*45.00	"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*60.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$40.25@$47.25	$41.40@$48.50
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	32.20 " 37.75
75% Rag	24.75 " 29.00	25.90 " 30.50
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$13.65@	$15.50
No. 2 Glossy Coated	12.40 "	14.00
No. 3 Glossy Coated	11.60 "	13.25
No. 4 Glossy Coated	11.15 "	12.75
No. 1 Antique (watermarked)	10.25 "	11.75
No. 2 Offset	9.60 "	11.00
A Grade E. F.	9.35 "	10.75
A Grade S. & S. C.	9.60 "	11.00
B Grade E. F.	8.85 "	10.25
B Grade S. & S. C.	9.10 "	10.50
C Grade E. F.	8.55 "	9.75
C Grade S. & S. C.	8.80 "	10.00
D Grade E. F.	8.25 "	9.50
D Grade S. & S. C.	8.50 "	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight to Destination.

Bl. Softwood Sulphite	$76.00
Unbl. Softwood Sulphite	64.00@ 66.00
Bl. Hardwood Sulphite	73.50
Unbl. Hardwood Sulphite	63.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich	72.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi-Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	66.00
Unbl. Soda	62.00
Groundwood	46.00

Transportation Allowances Applying to Producers of Wet Wood Pulp.

Below 50% Air Dry Weight	
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50
50%-80% Air Dry Weight	
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

Above 80% Air Dry Weight	
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum price.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	8.00	@	8.25
Silesias No. 1	4.50	"	4.75
New Unbleached	8.00	"	8.25
Blue Overall	5.75	"	6.00
Fancy	3.00	"	3.25
Washables	2.50	"	2.75
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cuttings	3.00	"	3.15

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Light and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

OPA Maximum Prices.

Foreign Rags

All prices nominal

New Rags			
New Dark Cuttings	2.25	●	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25
Old Rags			
No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.00	●	4.25
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	4.75
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	4.25	"	4.75
Sisal Strings	3.25	"	3.75
Mixed Strings	1.10	"	1.20

*OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	●	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.57½	"	—
Mixed Books	.85	"	—
No. 1 White Ledger	2.17½		
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old Kraft Corrugated Containers	1.50	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	.85	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	●	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1	.07½	●	.07½
New White No. 2	.04½	"	.05
Light Silesias	.04½	"	.04¾
Silesias, No. 1	.04	"	.04¼
Black Silesias, soft	.03¾	"	.04
New Unbleached	.07¼	"	.07½
Washable Prints	.03¾	"	.03½
Washable No. 1	.02	"	.02¼
Blue Overall	.04½	"	.05½
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales	.03¼	"	.03½
New Black Soft	.02¾	"	.03
New Dark Seconds	1.75	"	2.00
Khaki Cuttings—			
No. 1 O. D.	.03	"	.03¼
No. 2 Mixed	.02¼	"	.02½
Corduroy	.01¾	"	.02¼
New Canvas	.04¾	"	.05¼
New Black Mixed	—	"	.02½

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
White No. 2—Repacked	2.90	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Sisal Rope	3.75	"	—
Mixed Rope	.75	"	1.00
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila.)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Hard White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Jute Corrugated Cuttings	.90	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled	2.87½	●	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old Corrugated Containers	1.00	"	—
Jute Corrugated Cuttings	1.07½	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Jute Corrugated Cuttings	.90	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	3.50	●	4.00
Sisal Rope	4.50	"	4.75
Mixed Rope	1.35	"	1.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.75	"	5.25
Jute Carpet Threads	3.25	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.50	"	3.75
Scrap Sisal	4.50	"	4.75
Scrap Sisal for Shredding	—	"	.04¾
Wool Tares—			
Foreign	(nominal)		
Domestic	5.00	"	5.75
Aust. Wool Pouches	5.10	"	5.25
New Burlap Cuttings	5.00	"	5.25
Heavy Baling Bagging	4.25	"	4.75
Paper Mill Bagging	2.75	"	3.00
No. 2 Bagging	1.35	"	

*OPA Maximum Price

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	●	.04¾
Fancy Percales	.04¼	"	"
New White No. 1	.06¾	"	.06¾
New Light Flannelettes	.05¾	"	.06
Canton Flannels, Bleached	.06	"	.06¾
Underwear Cutters, Bleached	.06	"	.06¾
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¾
New Black Silesias	.03	"	.03¾
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06¾
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.03¾
Corduroy	.03¼	"	.03¾
New Canvas	.06¼	"	.06¾
B. V. D. Cuttings	.06¼	"	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	●	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	3.25	"	—
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	—
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.50	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bars	1.45	"	—